SUMMARY OF THE WAR

AND ITS CONSEQUENCES

COMPTON'S PICTURED ENCYCLOPEDIA

FROM INVASION OF POLAND TO FALL OF BERLIN—

Poles Yield to German Advance (September 1939)

Dispirited British Flee Dunkirk (May-June 1940)

German Air Raids Damage London (Winter 1940)

British Defend El Alamein in Egypt (July 1942)

U. S. Troops Land in North Africa (November 1942)

GEN

—IN EUROPEAN THEATER OF SECOND WORLD WAR

Germans Stopped in Stalingrad (January 1943)

U. S. Soldiers Attack at Salerno, Italy (September 1943)

U. S. Troops Press Forward in France (July 1944)

Germans Attack in Battle of the Bulge (Winter 1944)

Americans Cross the Rhine River (March 1945)

Russians Raise Red Flag over Berlin (April 1945)

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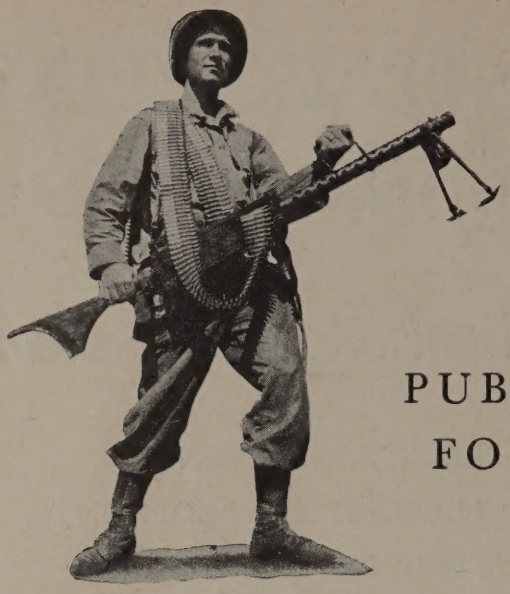
SUMMARY OF
THE SECOND WORLD WAR
AND ITS CONSEQUENCES

An Alphabetical Reference Book

PERSONS, PLACES, AND EVENTS;
SCIENTIFIC AND MILITARY DEVELOPMENTS;
AND POSTWAR PROBLEMS IN
PRESERVING PEACE

Illustrated with Photographs, Drawings, and Special Maps
Completely Indexed

F. E. COMPTON & COMPANY
PUBLISHERS OF COMPTON'S PICTURED ENCYCLOPEDIA
CHICAGO, ILLINOIS



PUBLISHERS' FOREWORD

THIS War Summary offers in compact form a complete survey of the second World War. Included are the march of events throughout the conflict, important personalities, accounts of the countries involved, and an appraisal of the outlook for the postwar years for various countries and the world at large. The publishers believe that this material presented in this form will serve many useful purposes in the most effective way.

This volume also offers the publishers' tribute to the heroic achievements and unflinching efforts of the American fighting man. It sets forth in world-wide panorama the deeds of the high-spirited, invincible Americans who stand symbolized by the figure on this page. As long as the volume remains in use, it will remind us all of the debt we owe to these modern crusaders for a better world.

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"BOMBS AWAY!" OVER HITLER'S "FORTRESS EUROPE"

A shower of American incendiary bombs falls on military targets somewhere in German-controlled Europe. Allied day-and-night air raids on German industrial and transportation centers sapped enemy resistance before the final, victorious Allied drive.

AIR WARFARE. When the second World War started in 1939, the United States had many plans for military aircraft but few machines on hand or in production. Many questions remained unanswered. Could an airplane sink a battleship? Could air power render ground troops obsolete? Could air speed shorten distances and bring overseas lands within range of air attack?

When the Japanese struck at Pearl Harbor Dec. 7, 1941, the United States had already learned many lessons from two years of war in Europe and intensive experience in building aircraft for itself and the British. American leaders knew how the German Stuka dive bombers aided panzer units in *blitzkrieg* tactics. They knew how English Spitfires had won the battle of Britain. They visualized heavy bombing of enemy industry and foresaw the need for aircraft which could girdle the world carrying men and supplies and reach enemy targets over vast reaches of sea or land.

During the two years between 1939 and the Japanese blow at Pearl Harbor the Army Air Forces and American manufacturers developed the following types of aircraft: *heavy bombers*, B-17 (Flying Fortress), B-24 (Liberator); *medium bombers*, B-25 (Mitchell), B-26 (Marauder); *light bombers*, A-24 (Dauntless), A-20 (Havoc); *fighters*, P-38 (Lightning), P-39 (Airacobra), P-40 (Tomahawk, Kittyhawk). Intensive efforts were made to develop the air-line type of transport planes, and resulted in several effective transport types: the two-engine C-47 (Skytrain) and the four-engine C-54 (Skymaster). These sturdy planes could carry heavy freight and passengers, evacuate wounded, and fly thousands of miles with little servicing.

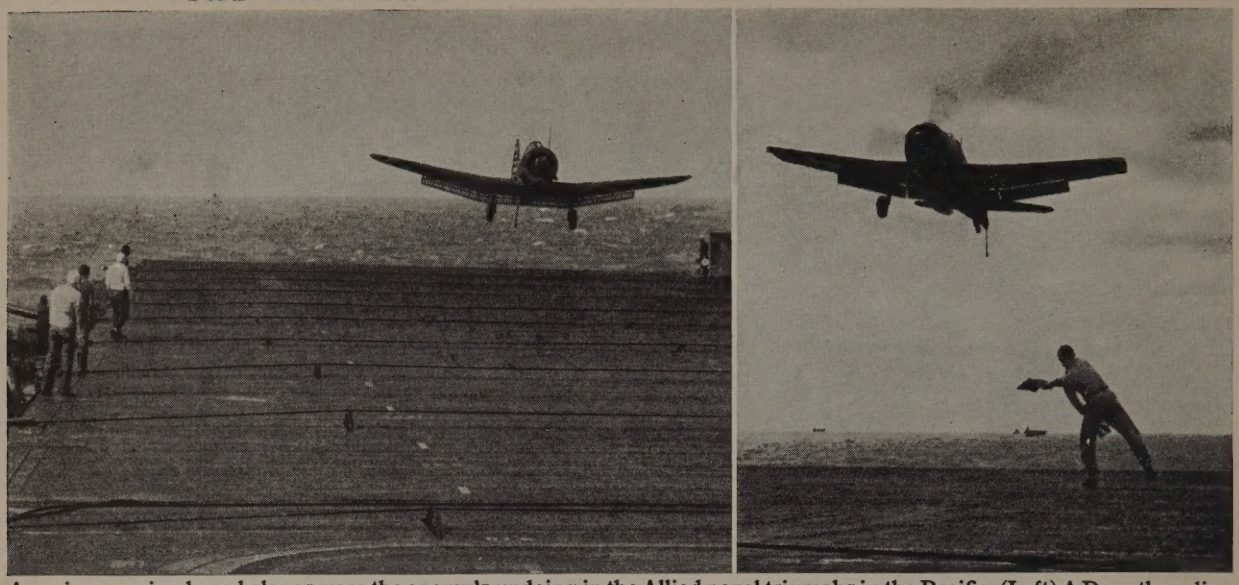
The Nation Builds Its Air Power

Before Pearl Harbor, much of the aircraft industry's output went to Britain (and after June 1941 to Russia). By July 1941, the Army had about 2,500 combat planes and the Navy about 4,000. But when the United States entered the war, President Roosevelt set a goal of 60,000 planes in 1942 and 125,000 in 1943.

The aircraft industry met the demand. During the period July 1, 1940-Sept. 1, 1945, it built more than 300,000 military airplanes. At the war's end, the Army had 80,083 aircraft, and the Navy enough to equip its 116 carriers (including 84 escort carriers), its land-based squadrons, and its transport services. In addition, a great number were shipped to the Allies.

During this time the Army narrowed production to a few types. For bombers, it relied upon the B-29 Superfortress, the B-17 Flying Fortress, the B-24 Liberator, the B-25 Mitchell, and the A-26 Invader. It used the P-51 Mustang, the P-47 Thunderbolt, the P-38 Lightning, and the P-61 Black Widow as its principal fighters.

THE CARRIER'S WAR-BIRDS COME BACK TO REST



American carrier-based planes were the enemy's undoing in the Allied naval triumphs in the Pacific. (Left) A Dauntless dive bomber, with wing flaps slowing its speed, glides in for a landing. Notice the cables which check the plane's run on deck. (Right) A landing signal officer directs a Hellcat's landing approach. A grappling hook hangs from the plane's tail.

The Navy used as its "first team" the Grumman Hellcat fighter, the Curtiss Helldiver dive bomber, and the Grumman Avenger torpedo bomber.

In producing these types the aircraft industry not only led the world in production; it did what no Axis nation could do—modify designs while in production. Thus the output which poured off the assembly lines contained improvements soon after American airmen learned the need for them from combat experience. Mass-production methods were developed intensively. The manufacturers used prefabricated parts. They substituted seamless welds for rivets, used light magnesium engine parts, and cut production corners everywhere.

The aircraft industry was separated into two divisions—air-frame production and engine production. To power the P-51, the fastest single-engine fighter in service, Allison developed a liquid-cooled V-type engine of 1,150 horsepower. The P-38 carried two turbo-supercharged 12-cylinder V-1710 Allison engines of 1,520 horsepower. The B-29 was powered by four Wright R-3350 Cyclone 18-cylinder engines. Each was radial, air cooled, turbo-supercharged, and rated at 2,200 horsepower.

The United States spent $47,352,000,000 on its aircraft in the second World War. About $3,448,000,000 was invested in aircraft plants. Of this sum, 91 per cent was contributed by the government.

Development and Uses of Land Fighters

In the first World War, the airplane figured in land fighting largely for reconnaissance. In the second conflict it came into its own as a fighting weapon.

Fighting between planes in the air changed from the twisting, dodging "dog fights" of the earlier war into head-on engagements in which superior range and weight of firepower won in a few seconds. Fights between single opponents also became rare. Engagements occurred as a rule between massed fleets of aircraft.

At first the Americans suffered some disadvantage in the fighting quality of their aircraft—especially in fights with the fast, highly maneuverable Japanese Zero. But improvements in American engines soon gave power enough to provide ample speed and armament and also to permit rugged construction and generous provision of armor. Thanks to these advantages, many a plane came home all but shot to pieces, but with the personnel unharmed and victorious. In some models, the pilots wore flak suits, made to turn hits from shell splinters and glancing bullets. Still other advantages were superior mechanical aids for navigating and operating and pressurized cabins to reduce the trials of high-altitude flying.

Corresponding advances came in coöperation with the ground troops. Medium and light bombers covered the fighting area, blasting enemy strong points, bridges, railroad junctions and railroad switching (marshaling) yards, and concentrations of supply and troop transport. Swift "hedge-hopping" attack bombers skimmed low over tree tops, burst unexpectedly upon the enemy with machine-gun fire and a shower of light fragmentation bombs, then vanished before defensive fire could be brought to bear.

Because of their speed and maneuverability, these attack bombers could "dive bomb" and "skip bomb." To dive bomb, they flew over the target in formation, then "peeled off," leaving the formation in regular order and diving directly at the target. At a very low altitude, they released their bombs with telling accuracy and turned away. To "skip bomb" a target like a moving railroad train, they flew at a low altitude for several miles toward the train. Then, at a point before the target was reached, they released their bombs. The forward, level motion of the bomber gave

impetus to the bomb and crashed it into the target.

In one of the most spectacular raids of the war, the R.A.F. blasted two of the biggest dams in Germany, the Moehne and Eder dams in the Ruhr. On May 16, 1943, they dropped dynamite-charged mines, which destroyed the dams and flooded the Ruhr and Weser valleys with millions of tons of water.

Navy Fighters Win Mastery of the Sea

The Navy's air power developed similar advantages, with suitable modifications for operations at sea. Rarely in the war did ships battle with each other. The contests were largely between carrier-based aircraft. When supremacy of the air was won by the fighters, the bombers moved in to attack the ships.

Naval bombers dropped both bombs and torpedoes. Their skip-bombing technique was similar to aerial torpedoing. They flew in at a low level and sent their bombs skimming over the surface of the water to explode against the side of the ship in the area of the vital engine, magazine, and control stations.

Bombing as a Strategic Weapon

In addition to aiding ground troops and naval vessels, air power developed a function entirely its own. This was *strategic bombing*, or sapping an enemy's power at the source, by blasting factories, transport, power plants, and housing in his home land.

Germany attempted this against Britain in 1940–41, but not powerfully enough to achieve success. The British started to retaliate in 1941, and delivered the first 1,000-plane raid in history against Cologne, May 30, 1942. But sufficient power was not available until American strength was built up in Britain. Of the 2,697,473 tons of bombs dropped on Nazi-held Europe, less than one-fifth fell before 1944 and less than one-third before July 1, 1944. Thereafter the raids became rapidly more widespread and devastating; and postwar studies in Germany indicated that Nazi power might have collapsed before air power alone.

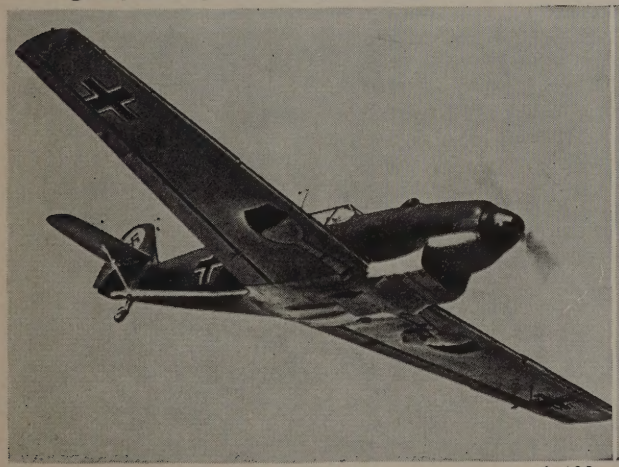
Allies Smash Enemy Industries

In these raids, the Allies selected their targets carefully to make each blow hurt to the utmost. Of the entire bomb tonnage, 32.1 per cent landed on land transportation targets and 9.3 per cent on oil, chemical, and rubber targets. Other important targets were the air-frame industry, the anti-friction bearing industry, and the steel-producing cities. The Nazis seem

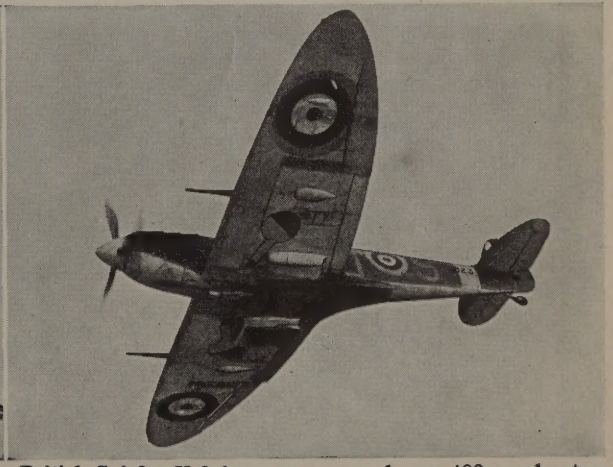
SOME FAMOUS ENEMY AND ALLIED PLANES

Japanese Mitsubishi bomber: crew 5 to 7; seven 7.7-mm. guns; max. speed 220 m.p.h.; range 1,100 mi.

Japanese Zero fighter: max. speed 335 m.p.h.; range 590 mi.; two 20-mm. cannons, two 7.7-mm. guns.



German Messerschmitt Me-109 fighter: max. speed 400 m.p.h.; two 20-mm. cannons, two 7.9-mm. guns.



British Spitfire V fighter: max. speed over 400 m.p.h.; two 20-mm. cannons, 4 Browning guns; ceiling 36,000 ft.

to have been hurt most by the damage done to their synthetic oil industry. Time and again large-scale movements of troops and supplies were paralyzed and the *Luftwaffe* was grounded by lack of motor fuel and lubricants when instant, heavy action was needed to fend off some Allied blow.

Japan was subjected to similar attack, but only after the patient, costly campaign to take island bases brought American air power within range (*see* Pacific Ocean). In 14 months of operations the B-29's destroyed the industrial capacities of 59 Japanese cities. They reduced Japanese aircraft production by 60 per cent, steel production by 15 per cent, and very nearly wiped out the whole oil-refining industry.

Two types of airplanes made possible this record of destruction—the B-29 Superfortress and the P-51 Mustang. Other bombers and escort fighters did much damage, but these were the leaders of the effort. The Norden bombsight, a complex mechanism which needed to be adjusted only for the weight of the bomb, altitude, and the actual sighting of the target, was a potent aid to the destruction record. During low visibility or at night, radar brought the target into view and enabled the Allies to maintain an "around-the-clock" bombing schedule in nearly all sorts of weather.

Air Transport on a World-wide Scale

Even before the war, airmen foresaw important uses for air transportation. At first they contemplated carrying only light tonnages of critical items, key personnel, and mail; but air transport gradually developed far beyond these limits. In the Pacific, a large number of the severely wounded were delivered to base hospitals by air. In areas where road, rail, or sea transport was impossible, air transport supplied entire campaigns (*see* Burma). In Europe, air transport often relieved critical shortages of ammunition and gasoline, and kept the Allied campaign moving forward.

For its part in this development, the Army Air Transport Command established a 188,000-mile network of air lines over which its 2,700 planes flew, carrying both passengers and freight. The Navy had a similar line, with 420 planes flying over 65,000 air-route miles. The transport planes carried not only items which ordinarily claimed air priority, but in emergencies transported bulk tonnage and whole divisions as well.

Perhaps the most spectacular of the A.T.C.'s accomplishments was its maintenance of supply over the perilous Himalayan "hump" route between India and China. By July 1945, it was transporting 71,000 tons a month over the "hump." Types used by both services included the C-46, C-47, C-54, and C-87 cargo planes.

U.S. PARATROOPER

He has full equipment for fighting behind enemy lines.

Air transports performed combat duty in delivering *airborne* attacks. These included the carrying of paratroopers to their jumping-off points behind enemy lines, towing troop-, arms-, and vehicle-laden gliders to invasion territories, and supplying such attacks after they were delivered.

DROPPING BEHIND JAPANESE POSITIONS IN NEW GUINEA

Screened by billowing smoke, these American paratroopers are jumping from transport planes to attack the enemy from the rear. The planes fly low, so the jumpers will be exposed only momentarily to enemy observation and fire.

The C-46 Commando, with a range of 1,800 miles and a speed of 250 miles an hour, carried 36 paratroopers. This and similar planes flew in the Normandy and southern France invasions and over Germany.

Similar transport planes towed wooden gliders to the aerial invasion of Burma and in the European air-borne operations. In all, about 3,600 gliders were used. They delivered attacks by eight divisions with all equipment.

The Partnership between Men and Machines

Marching with all these advances went steady developments that enabled fliers to meet the physical and mental demands imposed by air war. Among the physiological dangers to be overcome were anoxia (lack of oxygen) at high altitudes, frostbite, and "blacking out."

The first two were overcome in the B-29 Superfortress by pressurized cabins, which maintained comfortable heat and oxygen content. In other planes, crew members had to wear electrically heated suits and oxygen masks. The pilot lost consciousness—"blacked

UNLOADING AN AERIAL "FREIGHT CAR"

A small Navy ambulance plane is removed from a Curtiss "Commando" transport plane. The Army and Navy operated world-girdling fleets of these cargo planes.

out"—when his plane looped or turned sharply. When a maneuver created a force of four "G's" (four times the pull of gravity on the pilot's body), he "blacked out," because centrifugal force acted to withdraw blood from the brain and force it toward the legs and feet. To prevent this, the pilot wore five air bladders, arranged to expand against his abdomen and legs. This blocked the downward rush of blood.

Wherever possible, machines were provided to work and even "think" for the crew members. A "robot" pilot took over all straightaway flying, relieving the human pilot of fatigue. Navigators had an air position indicator to show approximate latitude and longitude. Controls, bomb doors, and releases were mechanically operated to minimize physical effort. "Intercom" telephones permitted talk between crew members.

Substituting Guided Missiles for the Human Element

While every effort was being made to aid men in handling airplanes, the war also produced a marked trend toward dispensing with the human element in

THE SILENT INVADER FROM THE AIR

Gliders contributed to the success of invasions by carrying men, guns, and vehicles behind enemy lines. Here a jeep and infantrymen emerge from the nose of a large glider.

flight. Typical developments were robot or "drone" planes and *guided missiles* of various sorts.

The Americans had long used radio-controlled drone planes, principally for gunnery practise. During the war they tried out larger planes, laden with explosives and directed from a distance against targets. The Germans tried similar planes against Allied shipping. A "queen" plane carried a small "drone" near the target, dropped it, and tried to direct it against a ship. None of these proved effective enough to influence the war.

The Germans, however, made devastating use of two guided missiles, the V-1 and V-2 bombs (*see* Jet Propulsion; V-Bomb). They were guided by an intricate control mechanism composed of air-driven gyroscopes, a pre-set altimeter, a precision compass, and an air log. The device set the launched bomb at the proper altitude and direction and held it on course. The air log measured the air miles, and at a pre-set distance armed the bomb and pointed it down at its target.

Despite the relative inefficiency of their performance in the war, the V-bombs afforded a grim forecast of any future war. Had the second World War continued, swifter, more accurate, and more devastating flying bombs and rockets would have been launched by both sides. The Americans could have added atomic bombs to the missiles, and spread indescribable destruction. From all this it is easy to imagine the terrible aspects of any future war—huge guided missiles flying from continent to continent, "guide" planes and submarines with human observers dodging about to direct courses, and death and destruction spreading blanketwise over the land. Perhaps the grimmest aspect of it all would be the unbelievable

speed of the missiles. The V-2 traveled at *supersonic* speed—that is, faster than the speed of sound—and its speed would be exceeded by far in any future missiles of the sort. Europe could bombard America or vice versa in a few hours.

War's Epilogue in "Operation Crossroads"

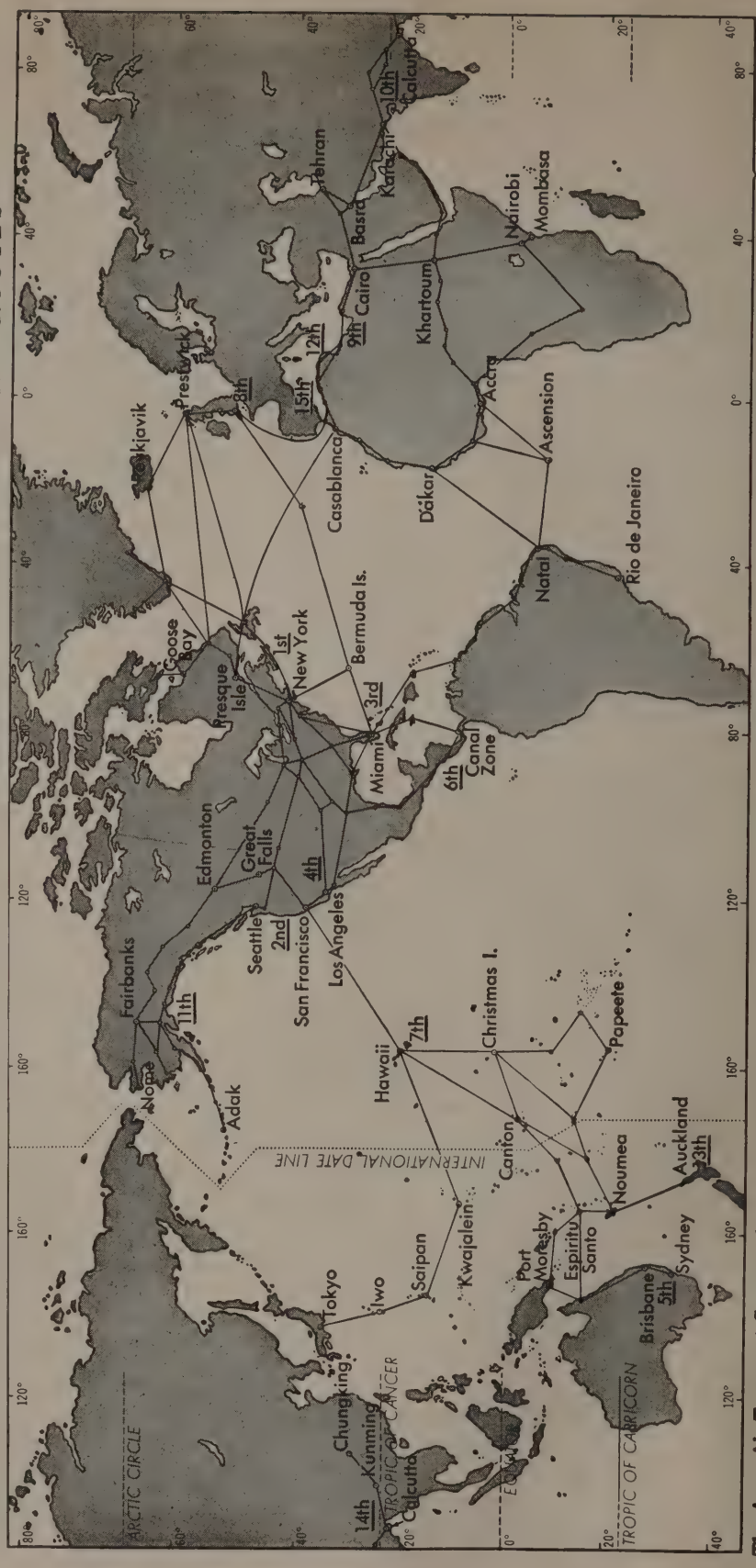
Everyone understood instantly the general extent of destruction which atomic bombs wrought upon Hiroshima and Nagasaki. But very little detail was known. Nobody on the spot measured the heat generated, the immediate effect of radioactive elements released, or the stresses and strains imposed upon structures. Nor was anything learned about effects upon ships, artillery, or other military matériel.

Accordingly, the American armed services planned three tests of atomic bombs. The first was held on July 1, 1946, at Bikini Atoll, 300 miles from Kwajalein in the Marshall Islands, to test the effect of exploding a bomb in the air above ships and other matériel. Later tests were scheduled to try an explosion at the water surface and below the surface. Following the wartime custom of using code names, the experiments were called "Operation Crossroads."

For the first test the Army-Navy Joint Task Force One anchored 74 obsolete ships in the Bikini Lagoon, among them five battleships, two carriers, and three cruisers. These were filled with a variety of jeeps, artillery pieces, tanks, clothing, food, fuel, and ammunition. In addition, goats, pigs, and rats were placed aboard.

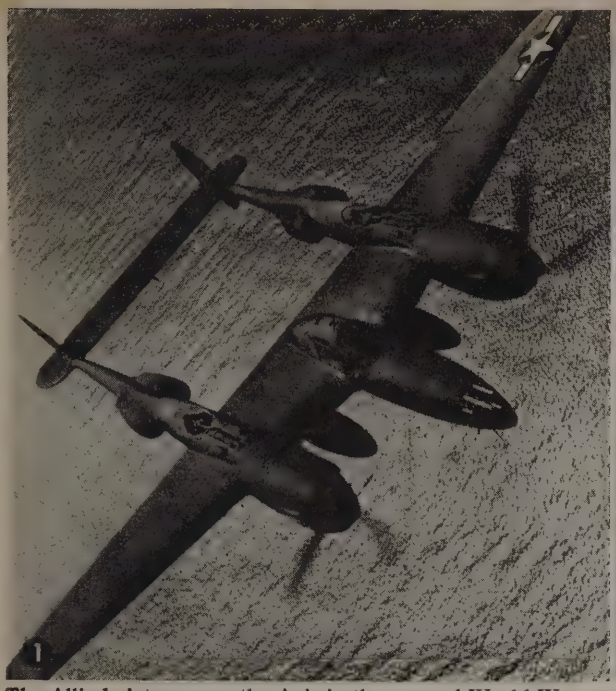
More than 10,000 instruments were placed at key points on ships, aircraft in flight, and on four

THE PRINCIPAL ARMY AIR FORCES' AIR TRANSPORT COMMAND ROUTES



The Army Air Transport Command operated to all corners of the world, delivering 40,000 planes overseas and taking personnel and supplies to places where they were needed in a hurry. At the height of its operations the ATC flew 51 million miles a month. Areas where the various U.S. Air Forces operated are shown on this map.

SOME TYPES OF AMERICAN MILITARY PLANES



The Allied victory over the Axis in the second World War was helped in great measure by American aircraft. The planes shown here were outstanding examples. 1. P-38 Lightning: fighter, reconnaissance, bomber; one 20-mm. cannon, four .50-cal. guns; bomb load up to 4,000 lbs. 2. P-80 Shooting Star: jet-propelled fighter; pressurized cabin; max. speed considerably more than 500 m.p.h. 3. SB2C Helldiver Navy dive bomber: two 20-mm. cannons in wings; bomb load about 2,000 lbs.; wing racks for rockets; 2-man crew.

This is the famed American B-29 Superfortress long-range bomber. A pressurized cabin enabled the crew to operate the plane at great altitudes in comfort and safety. The craft carried about 10 tons of bombs and was armed with 10 to 12 .50-cal. guns and one 20-mm. cannon. In the closing stages of the war in the Pacific, Superfortresses wrought heavy destruction on Japanese industrial cities. They also dropped the atomic bombs on Hiroshima and Nagasaki.

"OPERATION CROSSROADS" TEST AT BIKINI ATOLL

In the summer of 1946 the United States conducted tests of the atomic bomb at Bikini Atoll in the Marshall Islands. The tests were made by a task force of Navy and Army personnel to determine how much damage could be inflicted on warships by the new weapon. The radioactive cloud unleashed by the explosion of the first test bomb towers between pictures of some of the damaged ships: the battleship *Arkansas* (upper left), the submarine *Skate* (upper right), the carrier *Independence* (lower left), the battleship *Nevada* (lower right).

islands in the atoll. The nearest observers remained 15 miles away from the scene; but drone planes were set to fly directly into the explosion and send radio checks of conditions as long as the planes might last. A standard B-29 flew over the objective, dropped the bomb, and turned away.

As soon as it was safe to enter the area, the observers collected their instruments and studied the destruction. They found five ships sunk, the heaviest of them the Japanese light cruiser *Sakawa*, and 30 others damaged in varying degrees. On most of these, the concussive waves had crumpled the superstructures and damaged the boilers and fire rooms.

Many of the animals died from the deadly radiations within a few days from destruction of white blood corpuscles. From this, the investigators tentatively concluded that the principal danger from a bomb detonated at that altitude would be to the personnel in the bomb blast area. Other and later experimentation proved that the bomb, properly placed, would nearly annihilate ships and structures in the area.

ALASKA MILITARY HIGHWAY. The Alaska Military Highway was built in 1942 to provide a land route in the event the Japanese made the sealanes to Alaska impassable. The highway runs from Dawson Creek, British Columbia, to Fairbanks, Alaska, approximately 1,540 miles. Virtually completed in the record time of seven months and seventeen days, the road cost the United States government $189,000,000. Ownership of the Canadian portion of the road reverted to Canada on April 1, 1946.

American Army engineers, aided by civilian construction firms, built the road through the untraveled wilderness, laying beds of logs and earth over the frequent stretches of bog. The road was 18 to 30 feet wide and was surfaced with gravel and crushed rock, with bridges over the larger rivers.

STRATEGIC ISLES OF THE NORTH

The possession of rugged, inhospitable Attu and Kiska islands in the Aleutian chain was prized—and fought for—because of their value as supply and operational bases.

ALEUTIAN ISLANDS. On June 4-6, 1942, the Japanese occupied Kiska, Attu, and Agattu islands in the Aleutians, a chain of small islands extending 1,100 miles southwest from Alaska. The United States Army and Navy at once began joint operations to recover the islands beginning with almost daily air attacks. On May 11, 1943, the Americans landed on Attu and in three weeks of bitter, hand-to-hand fighting wiped out the entire garrison. On Aug. 15, 1943, Americans landed on Kiska, only to find that all the Japanese troops had been evacuated.

The Aleutians represented the furthest point of the Japanese drive toward Alaska. After recapturing the Aleutians, the Americans used them as submarine bases and air stations for North Pacific operations.

SETTING UP AN OPERATIONS BASE ON BLEAK ATTU

Hardly had American forces smashed the last desperate "suicide" charge of the Japanese to win back Attu before the Navy's "Seabees" began to turn the barren island into a base of operations. Here we see a bulldozer leveling a rutted road to make it more usable.

ALEXANDER, FIELD MARSHAL VISCOUNT HAROLD. Alexander started his career in the second World War with bitter defeats, one at Dunkirk (1940) and another as commander in Burma (1942). Then he was called to command a desperate defense in Egypt. While successful, he was overshadowed by his spectacular field commander, Montgomery. But he emerged as a sound and victorious commander when he led, first the British contingent, then the entire force, in the Allied campaign in Italy. In November 1944 he became Allied commander of the Mediterranean theater. After the war he was appointed governor general of Canada.

Born 1891, County Tyrone, Northern Ireland. Educated at Sandhurst. Commanded Irish Guards in France, 1914-18; brigade in India, 1934-38; 1st Division, 1938-40.

LANDING CRAFT DROP BOW RAMPS ON OKINAWA BEACH

Trucks and jeeps drive directly off LCT's (Landing Craft, Tanks) to dry land. Behind the beached ships, larger amphibious craft wait to unload. Amphibious ships landed assault forces in every seashore invasion in the second World War.

AMPHIBIOUS OPERATIONS. To make landings on enemy-held beaches the Navy and Army developed new boats and shallow-draft ships and new techniques in landing men and equipment. These amphibious vessels ranged in size from the small LCVP (Landing Craft, Vehicles, Personnel) to the 327-foot LST (Landing Ship, Tanks). Among them were amphibious trucks (ducks) that could travel by sea or on land.

Amphibious operations included: (1) pre-invasion bombardment; (2) clearing a channel, by mine sweepers and underwater demolition teams; (3) landing troops and matériel, aided by bombardment; and (4) supply and reinforcement. (*See also* Invasion Tactics.)

NORMANDY INVADERS WADE SURF

Following the "ducks" and half-tracks ashore, American soldiers move down the landing craft ramp. For several days, until emergency docks were built, Allied forces landed on Normandy beaches through the surf.

ARMIES. A nation can muster about 10 per cent of its people into its armed forces; any larger draft upon manpower weakens its capacity to produce for war. Published and estimated figures for the world's armies, added to the naval strengths, roughly bear out this percentage. But in 1939, the United States had only 530,000 soldiers. Of these 187,886 were in the Regular Army; the remainder were National Guardsmen and Organized Reserves, still civilians. How this force grew is told in the following article (*see* Army, U.S.).

It is impossible to estimate the percentage of home guard and guerrilla troops in Russia's total of 18,000,000. Similarly, the German forces of 5,235,000 (1944 estimate) had an undetermined number of "satellite troops." These men were pressed into service from occupied countries. France mobilized 5,000,000 men at the beginning of the war, but most of them were demobilized after France capitulated in 1940. By 1943 only 90,000 "Fighting French" were still in the field. By 1945, strength was rebuilt to about 300,000.

About half of any nation's ground forces consist of combat troops, organized in divisions. The other half serve as army, corps, and general reserve troops which support the divisions when necessary; in administrative and supply services; and in cadres for basic and advanced training.

The British Empire and the United States mustered about 8,000,000 and 8,300,000 men respectively (1945 estimate). Of these totals, roughly one-fourth served in the air forces. Russia used a much smaller portion because it employed air power only for battle.

ARMY, U. S. The United States entered the war in 1941 with an army of 1,600,000 men; by V-J Day it had 8,300,000 men. Some came from the regular Army, the

AMERICAN TROOPS PARADE IN FULL BATTLE DRESS

Uniformed in summer-weight "sun-tans" and carrying their rifles with fixed bayonets slung over their shoulders, these soldiers march in battle gear developed by intensive army tests. The M-1 helmet differs greatly from the first World War design, and has a removable plastic liner. The field bag, cartridge belt, and leggings are of web canvas material.

National Guard, the Organized Reserves, and by volunteer enlistment; but the great majority came through Selective Service channels.

The original nucleus of regular and Guard officers was vastly enlarged by training selected enlisted men in officer candidate schools. Many civilians were commissioned directly, but usually for special service.

For overall administration, the Army on March 9, 1942, established three commands: Ground Forces, Air Forces, and Service Forces. For combat, the troops were organized in field armies, under theater commanders.

Army training started with an intensive basic course to produce physical fitness and mastery of basic weapons. Thereafter the soldier learned the duties of some particular arm or service such as infantry, and took part in exercises for ever larger units until he participated in realistic maneuvers of field armies. The entire program lasted generally for at least a year.

Troop organization for the war started with the lowest unit, a squad. In place of the old, rigid squad of eight men in two ranks, each squad had as many men as needed in a single line. Three or four such squads formed a platoon and four platoons a company (or battery, in artillery). Four companies made a battalion, and three battalions a regiment.

The fundamental large unit was the division. An infantry division of some 15,000 men had three regiments of infantry, each supported by a battalion of artillery.

SOLDIERS OF ALL NATIONS DISPLAY THEIR DISTINCTIVE UNIFORMS

1. The Japanese wears roll puttees and a forage cap. 2. The Indian Sikh never cuts his hair or beard. 3. The Chinese uniform is of heavily padded cotton. 4. The Australian fights in shorts and a wide-brimmed hat. 5. The British soldier keeps warm in woolen battle jacket and trousers. 6. An Italian soldier in dress parade uniform. 7. The German wears his typical helmet and boots. 8. The Russian fatigues blend with the land. 9. A helmeted French Commando.

and engineer and service troops. An armored division had two tank regiments, three artillery battalions, an antitank battalion, a motorized infantry regiment, and the necessary service troops. The Ground Forces' peak wartime strength was 89 divisions.

The basic Air Force unit was the group of three or four squadrons having the same type of planes, plus a group headquarters. Each squadron had from 12 to 25 planes. Each squadron had from 284 to 427 men to perform all fighting and ground duties. By the war's end, the Air Forces had 273 combat air groups in service.

After the war the Army wanted permanent universal service, with one year of training at age 18. Many objected that such youths were immature, and that a well-paid, highly trained volunteer army would be better suited to use guided missiles and other highly technical developments. In reply, the Army pointed to the need for large garrisons in occupied enemy countries and for a large number of basically trained soldiers.

MEN LEARN TO FIGHT UNDER REALISTIC BATTLE CONDITIONS

1. At a Close Combat School, artillerymen learn commando thrust-and-parry tactics with dummy bayoneted rifles during a hand-to-hand fighting practise session. 2. On California maneuvers, the mobile "PX" brings refreshment to soldiers parched from weeks of desert training. 3. Preparing for the North African terrain, M-3 medium tanks abandon the road to run over the desert hillocks and scrub vegetation. 4. Demonstration troops at an officer candidate school show how to use a Bangalore torpedo to blast barbed-wire barricades. 5. The final "briefing": 20th Air Force veterans learn details of their last mission—discharge and homecoming.

ARTILLERY BLASTS ROADS FOR GROUND FORCE ADVANCES

1. On the Italian front, this 240-mm. howitzer shoots a 345-pound shell into the German-held fort at Cassino. 2. A 105-mm. wheeled carriage howitzer battery fires a barrage at Japanese positions on Luzon. 3. This 4.2-inch mortar squad fires its "goon gun" every three seconds. Weighing less than 300 pounds, the mortar throws a 24-pound shell 2½ miles. 4. A height-finder squad quickly determines the altitude of attacking enemy planes.

ARNOLD, GENERAL HENRY H. In the second World War, United States Air Forces were under the command of "Hap" Arnold, a man whose career began in the earliest days of the airplane. The Wright Brothers taught him to fly in 1911. In 1912 he set a new altitude record of 6,540 feet and later that year he received the MacKay Trophy for a reconnaissance flight. (The same trophy was awarded him in 1934 for leading an army mass flight to Alaska.) He became chief of the army air corps in 1938, and commanding general in 1942. He believed in leading by inspiring enthusiasm in his men.

Born 1886, Gladwyne, Pa. Graduated West Point, 1907. Instructor, signal corps aviation school, 1911; aero squadron commander, Panama, 1917. Commanded various airfields, 1922–36. Made 5-star general, 1944.

ARTILLERY. One of the greatest tactical advantages the Allies had was their use of mobile weapons. No battle line was static; it was "fire and run"—advancing, retreating, enfilading. Along with fire power, the prime consideration in ordnance design was transportation—a self-propelled gun carriage or one towed by tractor or truck.

The most widely used American guns may be seen in the pictures accompanying this article. The chief German weapon was the rapid-firing 88-mm. gun, which could shoot armor-piercing, fragmentation, or antiaircraft shells equally well. The Germans also introduced

ARTILLERY DESTROYS PLANES, DAMAGES SHIPS

1. An army barge crew mans a .50-caliber water-cooled machine gun. 2. A 40-mm. gun crew stands alert for enemy aircraft. The gun, of Swedish design, was the largest American machine gun. It normally takes five men to handle the gun. 3. Its 25-foot barrel pointing skyward, this 155-mm. gun rests easily on its 11x20 tires. 4. The army's largest antiaircraft weapon was this 120-mm. (4.7-inch) gun. 5. Early in the war, the favorite British navy antiaircraft gun was this four-barreled pom-pom. 6. Empty five-inch 38-caliber shell cases litter an American cruiser's decks.

ARTILLERY DUELS WITH ENEMY GUNS AND TANKS

1. A 105-mm. howitzer crew fires its gun at extreme elevation to lob shells over high obstacles. 2. The 110-pound 75-mm. rifle shoots a 14-pound shell more than 4 miles. 3. A 155-mm. "Long Tom," mounted on the chassis of a Sherman tank, blasts at Nazi positions. 4. In maneuvers, a soldier drills with a .30-caliber machine gun.

the "choke" principle into barrel design—a bore slightly tapered toward the muzzle to give additional muzzle velocity. A versatile American weapon was the Army's 105-mm. gun, which served as a fieldpiece, a tank gun, and a tank-destroyer gun. The Navy's five-inch 38 caliber gun was effective against air and surface targets.

Radar greatly increased the accuracy of artillery shooting. Using radar to trace the trajectory of enemy shells, artillerymen could locate a gun position and demolish it with only a very few salvos. Naval radar determined the accuracy of fire by spotting the splashes of shells that fell short or over.

American gunners used the massed firing, or "time on target" technique against enemy field targets. By synchronizing the firing of all the guns in a sector, they were able to make the projectiles explode at the same instant with great destructive and demoralizing effect.

One of the great Allied "secret weapons," put into use in 1944, was the VT (Variable Time) radio proximity fuse. The fuse was a miniature radar set fitted into the nose of a shell, bomb, or rocket. As the projectile neared an object, radio waves transmitted from the fuse reflected back to the fuse receiver. At 70 feet from the object, the receiver acted as an electronic switch and detonated the projectile.

Atomic bomb. The most important scientific development of the war was the successful conversion of mass into energy by nuclear fission. The practical result of this "atom splitting" was the atomic bomb.

By the time war broke out in Europe, atomic physicists had learned that the nucleus of a uranium isotope (U-235) breaks up when bombarded with neutrons and releases an immense amount of energy. The result is explosive in power; but this fact was masked because only submicroscopic bits of material were used.

Nevertheless, the Office of Scientific Research and Development appreciated the possibilities, and in 1940 sponsored further research. In 1942 the Army Engineer Corps took over, giving the project a code name, "Manhattan Project," and spending about two billion dollars on it. Much of the money went into great plants to manufacture the explosive material at Oak Ridge, Tenn. (the Clinton Works) and at Hanford, Wash.

After testing an experimental model between Los Alamos and Alamagordo, N. M., on July 16, 1945, the Army dropped a bomb on Hiroshima on August 6. Another bomb, superior in design, was dropped on Nagasaki on August 9. This ended the Pacific war. Reputed to have an explosive force 20,000 times that of TNT, the bombs killed an estimated 70,000 people and obliterated many square miles of the two cities.

Principle of the Atomic Bomb

Explosive atomic energy is possible because of a fundamental relation between mass (matter) and energy. According to modern theory, every atom of matter consists (roughly) of tiny particles of electricity called protons, electrons, and neutrons. The protons have positive charge, the electrons negative, and the neutrons

neither or both. At least, they exhibit no charge. Each kind of particle in turn consists of intensely compressed energy. Each kind of particle may also hold together as electricity (and matter) for millions of years; but if struck a hard enough blow, it can dissolve into energy, such as light, radiant heat, or electromagnetic radiation. The ratio between the amounts of mass and energy in such transformations was forecast in 1905 by Albert Einstein as $E=mc^2$. That is, the energy is equal to the mass multiplied by the square of the velocity of light (measurements being in ergs, grams, and centimeters per second respectively). Under this rule, one pound of matter contains energy enough to supply electricity for all the United States for several weeks.

Most kinds of atoms are never hit hard enough to be dissolved. But one variety of uranium (the isotope U-235) breaks into smaller atoms when hit with neutrons. It also emits free neutrons, and a small part of the mass is transformed into energy. Because of the high ratio of energy released to mass, a pound or two of this isotope would be ample for an atomic bomb.

At first the chance of obtaining such an amount of explosive (or fissionable) material seemed remote. U-235 is extremely rare—only seven atoms out of every thousand in a mass of normal uranium (U-238). The two isotopes are chemically identical; the only difference is a shortage of three neutrons in the U-235 nucleus. Hence any chemical reaction would work on both alike instead of separating them; and mechanical or electrical methods offered little better promise.

But wartime experiments opened up another possibility. The normal variety (U-238) does not explode when hit by a neutron; but it does build up into a material which is explosive. The atom absorbs the neutron, passes through an intermediate state called *neptunium*, and becomes *plutonium*, or Pu-239. This explodes like U-235 when hit by neutrons.

Usable masses of fissionable material therefore might be obtained by bombarding ordinary uranium with neutrons, provided one precaution was observed. It would be necessary to avoid a rapid *chain reaction* in the mass under treatment. This could occur if a sufficient mass was concentrated, and then a few atoms were exploded. Each explosion would release free neutrons among other products; these would explode others, and the explosions would build up, like a flame running through gunpowder, and set off the entire mass.

To avoid this, the material under treatment was kept in tubular containers, embedded in masses of graphite called piles or moderators which weighed several tons. Thus the reaction could be held down to safe speed as long as desired; then the plutonium could be extracted. On the other hand, a bomb could be made and exploded by preparing a mass sufficient to set up a chain reaction in *two* parts. As long as the parts were kept separate, no reaction would occur. The moment they were brought together by suitable mechanism, a chain reaction would start and set off the bomb.

Other difficulties arose in protecting health and life against dangerous features of the working processes. The atomic products and emissions of energy from the transformations could easily be far more deadly than any X-ray or radium contact. Therefore every process had to be shielded behind massive concrete walls or thick lead plates, and every operation was performed by automatic machinery, worked by remote control.

Peacetime Uses of Atomic Energy

When the war ended, thought immediately turned to peaceful uses of the new discovery. It promised to open up a boundless source of radiation for use in medicine and for modifying or transforming various materials for industrial use. The enormous amount of heat and energy available offered dazzling prospects for pushing fundamental research into the structure of matter.

The piles also developed enormous heat while transforming U-238 into plutonium. This heat could be used to produce steam for turbines and hence for generating electricity. In such use, one pound of plutonium would produce as much energy as 1,500 tons of coal or 250,000 gallons of fuel oil. But to compete economically, the plutonium would have to cost less than $10,000 a pound —and the wartime experiments came nowhere near achieving this.

Another obstacle to use in airplanes and motor vehicles was the great weight of the piles and the necessary protective shields of lead or similar material. Ships and locomotives, however, might carry the load. Another immediate prospect was use to produce power in remote places, where ordinary fuel could not be hauled.

Problems of International Control

The devastation produced in Japan convinced the entire world that another war fought with atomic bombs would probably destroy civilization. Accordingly, demand arose for placing the new force under international control, with safeguards to prevent use in war.

At first, American policy was hesitant. The May-Johnson bill sponsored by the Army in Congress proposed strict military control in the United States, and a cautious approach to international control. Against this the McMahon bill, supported by scientists generally, proposed civilian control, with freedom of research for nonmilitary purposes. Both bills, of course, proposed strict control of uranium and other ores which could furnish fissionable material.

On June 14, 1946, Bernard Baruch, American member of the United Nations' Atomic Energy Commission, proposed an international atomic-development authority to control the bomb. This group would control raw materials needed for all forms of atomic energy, inspect plants and laboratories to prevent bomb making, and punish nations which violated the peaceful use of atomic energy. The United States, Canada, and Great Britain would give the group their "know how" of harnessing atomic energy and dispose of bombs already made, once they were assured of effective international control.

ATTLEE, CLEMENT RICHARD. With the Labor party's sweeping victory over the Conservatives in July 1945, mild-mannered Clement Attlee succeeded dynamic Winston Churchill as prime minister of Great Britain. Immediately he launched a program of socialism, including nationalization of land, the basic industries, and the

Bank of England. But lack of financial resources slowed down fulfillment of his pre-election promise of new homes and good jobs. "Cake for none until all had bread" became his domestic slogan. In November 1945 he visited the United States, addressed Congress on Anglo-American problems, and conferred with President Truman and Prime Minister Mackenzie King of Canada on international measures to control atomic energy.

Attlee's selection as prime minister climaxed 11 years as chief of the Labor party. Since 1942 he had served as deputy prime minister in Churchill's coalition cabinet.

Born 1883, London. Educated at Haileybury College and at University College, Oxford. Entered law practise, 1905. Became social science lecturer, London School of Economics, 1913. Served in Gallipoli, Mesopotamia, France, in first World War. Served as member of Parliament from Limehouse, 1922–45. Became postmaster general, 1931. Served as leader of the opposition, 1935–40. Wrote 'The Will and the Way to Socialism'.

AUSTRALIA. Scarcely an hour after Great Britain went to war with Germany, Australia also declared war on the Nazis. Australia's first expeditionary force landed in Egypt in February 1940 to help defend the Suez Canal. Led by Lieut. Gen. Thomas Blamey, the "Aussies" served in General Wavell's army (*see* Blamey; Wavell). They helped drive the Axis from Egypt and East Africa, but lost heavily in Greece and Crete.

Japan's entry into the war, Dec. 7, 1941, brought the conflict to the very threshold of the "land down under." The fall of Singapore on Feb. 15, 1942, erased British defenses against a Japanese drive on Australia. The Japanese then swept the "Aussies" from the Bismarck Archipelago, Rabaul, the Solomons, and northern New Guinea. On March 8 Japanese planes began bombing Port Moresby, the last stronghold in New Guinea.

Meanwhile, in reply to Australia's plea for aid, American forces had landed in January 1942. On March 17 Gen. Douglas MacArthur arrived to command Allied forces, with General Blamey as second in command (*see* MacArthur; for the ensuing campaign, *see* Pacific Ocean). Premier John Curtin and Australia generally worked untiringly to promote coöperation with the United States, both for the war and for after years.

AUSTRALIANS SMASH ENEMY IN NEW GUINEA JUNGLE

This "Aussie" mortar crew is firing on the Buna front in December 1942. The almost vertical angle of the mortar shows that the Japanese are in extremely close range.

A NEW ERA OPENS IN SCIENCE AND IN WAR

Here the first atomic bomb is exploding in New Mexico on July 16, 1945. The explosion opened a new era in warfare, and ushered in an "age of atomic power."

Two-thirds of Australians between 18 and 40 served at some time in the armed forces. In the war's late stage the "Aussies" served primarily as "mopping up" units. Casualties reached 95,561 and expenditures passed 6½ billion dollars. Lend-lease from the United States totaled $1,154,000,000, and Australia's "reverse lend-lease" was $835,004,000. Industrial output had been greatly expanded to meet war needs, particularly in iron and steel, alloy steels, machinery, chemicals, and processed foods. Australia emerged from the conflict as a creditor nation, but with the problem of finding markets for its expanded industrial output.

BALKANS. In peace and in war the major powers of Europe vie for control of the Balkans, which command the routes to the Middle East. After the first World War, the Balkans passed from the sway of Turkey and Russia to the influence of Great Britain and France. The world depression, however, forced most of the Balkans to turn their trade to Germany. They eased their financial problems by bartering German manufactures for Balkan raw materials. In Rumania and Bulgaria this economic dependence grew into political domination. After Germany launched the war in 1939, they became its allies. Greece and Yugoslavia resisted and were conquered by Germany. (*See* separate articles for each country.)

GUERRILLA FIGHTER

Partisans like this Greek resisted the Nazis. Notice the grenades in his belt.

The Balkans then became a battlefield for guerrilla warfare. Beginning with the liberation of Rumania in

"STUKA STOPPERS" OVER LONDON

Barrage balloons like this protected British cities from low-flying Nazi bombers. The trailing wires would shear off the wings of planes attempting to fly below the balloon.

August 1944, the Russian army freed all the Balkans except Greece, which was retaken by the British.

The return of peace brought Greece into the sway of Britain, while Russia dominated the rest of the Balkans. Supported by Russia, Communist governments arose in Bulgaria and Yugoslavia, and Communists gained a strong rôle in Rumania. This extended Russia's power to the Mediterranean, Britain's "life line" to the East. Russia then made strenuous efforts to gain sole control of the Danube and to get command of the Dardanelles from Turkey (*see* Turkey).

Baltic States. The second World War cost three of the Baltic States—Esthonia, Latvia, Lithuania—their liberty. Immediately after the fall of Poland in September 1939, Russia forced its military "protection" on them, garrisoning them at strategic points to make them buffers against Germany. Finland refused Russia's demand, and was attacked by the Red army in November (*see* Finland). In 1940 Russia annexed Esthonia, Lithuania, and Latvia as Soviet republics. But, standing on the fringe of Russia, they were swiftly overrun by Germany in 1941. Russian forces regained them in 1944 after heavy war damage. Russia tried to restore industry, especially shale production, but the Balts evidenced rising unrest against Soviet rule.

Barrage balloons. These are stationary balloons grouped in clusters to protect a place from attack by low-flying airplanes. Balloons of the kite type are used, and each is raised or lowered with a cable from a motor-driven winch. The balloons are flown at elevations varying from 10,000 to 25,000 feet. They may be placed close enough together to prevent planes from flying between the cables, or networks of wire may be strung from cable to cable to entangle the attackers. Many were used in the defense of English cities. Balloon barrages were sometimes sent up from war vessels to protect convoys or to shield landing operations.

ANTWERP, KEY ALLIED INVASION PORT

The freighter in the background unloaded assault boats (left) on this quay in Antwerp. British and Canadians fought from Oct. 6 to Nov. 3, 1944, to clear the Antwerp seaway.

HOW A BAZOOKA IS AIMED AND FIRED

The soldier aims carefully before pressing the electric trigger to ignite the rocket. Propelling gases escape through the rear of the gun. It has no more kick than a small rifle.

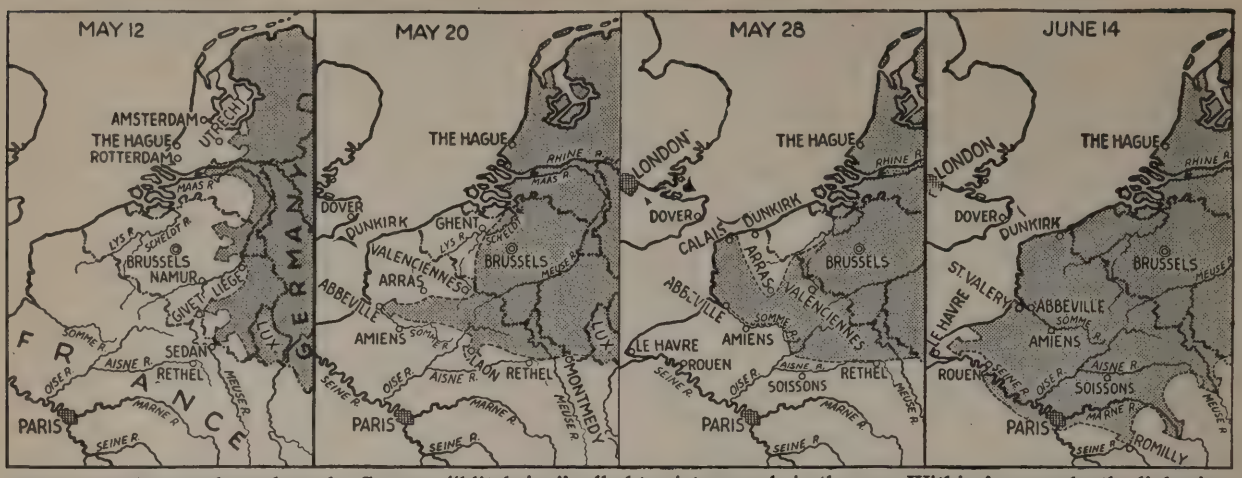
Bazooka gun. The infantry rocket launcher ATM1 (bazooka) knocked out heavy tanks. Its projectile hit with the power of a 75-mm. shell, yet it could be carried as easily as a rifle. It answered the need for launching heavy fire power instantly, at ranges up to 400 yards, in spots inaccessible to big guns. It fired its rocket from a metal tube 54 inches long, open at both ends. One man loaded it from the rear, another fired it.

Belgium. On May 10, 1940, German motorized forces rolled into neutral Belgium. By May 28 they had overwhelmed the country, and Belgium became part of Hitler's Europe (*see* War in Europe).

Premier Hubert Pierlot and his cabinet escaped to London, and the Germans held Leopold prisoner. On May 30 the cabinet declared Leopold no longer king.

Liberating Allied armies entered Belgium Sept. 2, 1944. The cabinet returned, and parliament installed Leopold's brother, Prince Charles, as regent. A prolonged conflict followed between Conservative and Radical elements. After Leopold was freed, May 8, 1945, his desire to return as king complicated the situation. In parliamentary elections held Feb. 17, 1946, no one party gained a majority. Finally, in March 1946, the

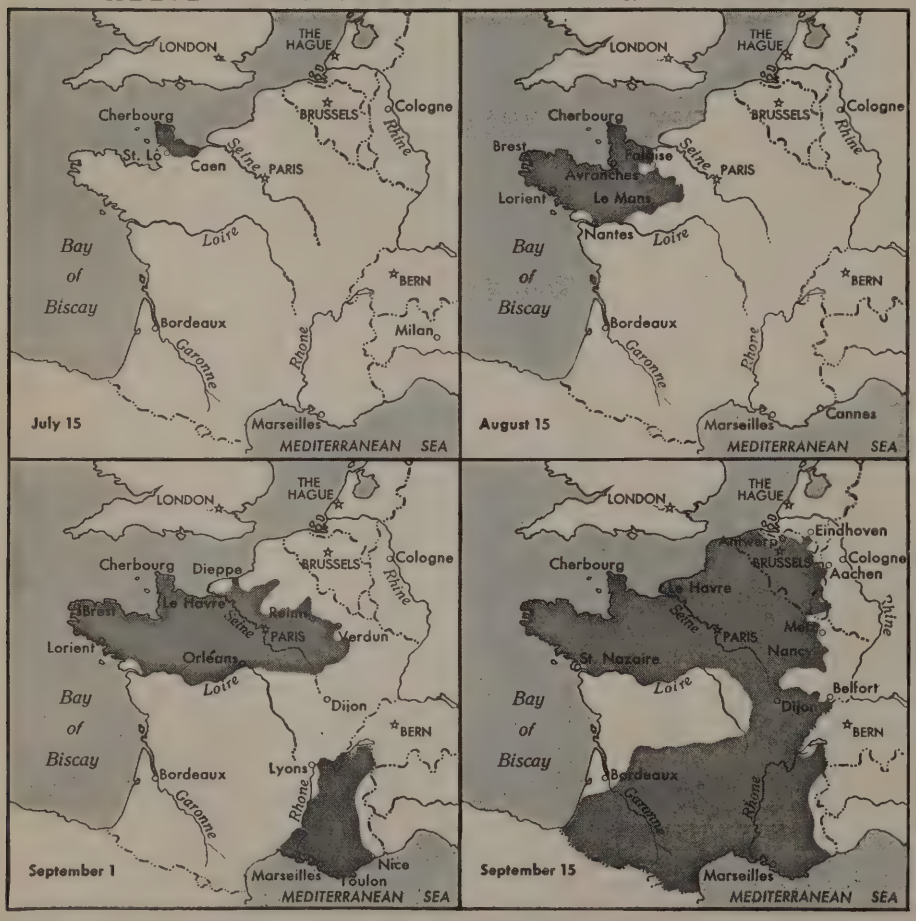
GERMAN "BLITZ" ATTACK ON THE LOW COUNTRIES—1940



This series of maps shows how the German "blitzkrieg" rolled to victory early in the war. Within four weeks the lightning attack forced the Belgian and Dutch armies to surrender, drove the British from Dunkirk, and moved on to Paris.

country accepted a moderately leftist cabinet headed by Achille Van Acker, a socialist. Leopold remained in involuntary "exile." Despite drastic shortages Belgium made rapid strides in reconstruction.

ALLIED "BLITZKRIEG" IN FRANCE—1944



Four years after the German "lightning war," the Allies used the same tactic with even greater success. These maps show how in two months Allied armored forces drove inland from Normandy beachheads and won back almost all France and Belgium.

BENES, EDUARD. After the first World War, two university professors, Thomas Masaryk and Eduard Benes, created the republic of Czechoslovakia from northerly fragments of the ruined Austria-Hungarian empire. After 17 years as President Masaryk's foreign minister, Benes became president in 1935. He had to flee in 1938 when the Munich pact placed his nation under Germany's heel. In the second World War, he headed the Czech government-in-exile. In April 1945, the freed Czechs hailed his return as president.

Born 1884, Kozlany, Bohemia. Educated at Charles University in Prague (here met Masaryk) and at Sorbonne and Dijon. In first World War, worked with Masaryk to plan Czech republic. Taught at University of Chicago, 1939.

BEVIN, ERNEST. Throughout the war, Britain's foremost trade-union leader served as minister of labor and national service, and wielded power next to Churchill's. Every worker, employer, and factory came under the command of hard-working Bevin. He sped production, kept strikes at a minimum, bolstered morale. After the Labor victory at the polls in July 1945, he became Britain's foreign secretary

THE AMERICAN VERSION OF BLITZKRIEG

Shortly after the Allied invasion of France, General Patton (see portrait below) launched an American-style "blitz" attack against the Germans and swiftly drove them back almost to the Reich. 1. A U.S. armored column pursues the fleeing enemy. 2. Infantrymen move up to hold ground won by the tanks. 3. Riflemen "mop up" snipers left behind by the Germans.

Born 1881, Winsford. Orphaned at seven, went to work at ten. Won minimum-wage standards for dock laborers, 1920. Merged 32 labor unions into Transport and General Workers Union, 1922. Elected chairman, general council, Trades Union Congress (Labor party's highest post), 1936 and 1937. Became Labor member of Parliament, 1940.

BLAMEY, GENERAL SIR THOMAS. A rugged Australian, General Blamey played a big part in winning two world wars. In 1914–18, he commanded Australians in Egypt, Gallipoli, and France. He led the Australian Imperial Force in Egypt in 1940 and the Anzac forces in Greece in 1941. He was promoted in 1941 to deputy commander in chief of the British forces in the Middle East. In 1942 he was made commander of Allied land forces in the Southwest Pacific, second in command to MacArthur. The two worked together in the sweeping New Guinea campaign, 1942–44, and both were aboard the U.S.S. *Missouri* for Japan's surrender in Tokyo Bay.

Born 1884, Wagga Wagga, New South Wales. Joined army, 1906. Knighted, 1919. Became chief commissioner, Victoria police, 1925; chairman, manpower board, 1937.

Gen. George S. Patton, Jr.

BLITZKRIEG. In the second World War, Germany conquered its neighbors by using tactics called "lightning war" (*blitzkrieg*). This began with a surprise attack on a country. Bombing planes and paratroopers led (to seize strategic points and disrupt defense). Then German mechanized divisions broke through the country's defense lines and drove deep into enemy territory. Air and ground forces fought the confused army and people until the country surrendered.

The blitzkrieg was successful against an unprepared country. But gradually the Allies became strong in air and mechanized power, and used better defense tactics. Blitzkrieg methods to break the first defense became too costly and impractical. The armies therefore reverted to fire power (including tanks) and infantry for the first breakthrough in enemy lines. Then the mechanized divisions were sent through the break and blitzkrieg tactics were used to disorganize the enemy.

BLOCKADE. To keep Germany from receiving goods from co-belligerent and neutral nations, the Allies patrolled the sea lanes and also attempted, by diplomatic and trade pressures, to stop the flow of goods at the source. The Allies made trade agreements with neutral nations, required neutral ships to carry cargo-approval certificates ("navicerts") from Allied officials, and blacklisted businessmen who traded with the Axis. When Germany invaded the neutral nations of Europe, it broke this "paper" blockade and took over the resources it needed for war.

Germany's submarine campaign was launched to blockade British and Russian receipt of supplies. But the most successful blockade was that placed by the United States around Japan, completely cutting the nation's vital supply lines from the mainland of Asia.

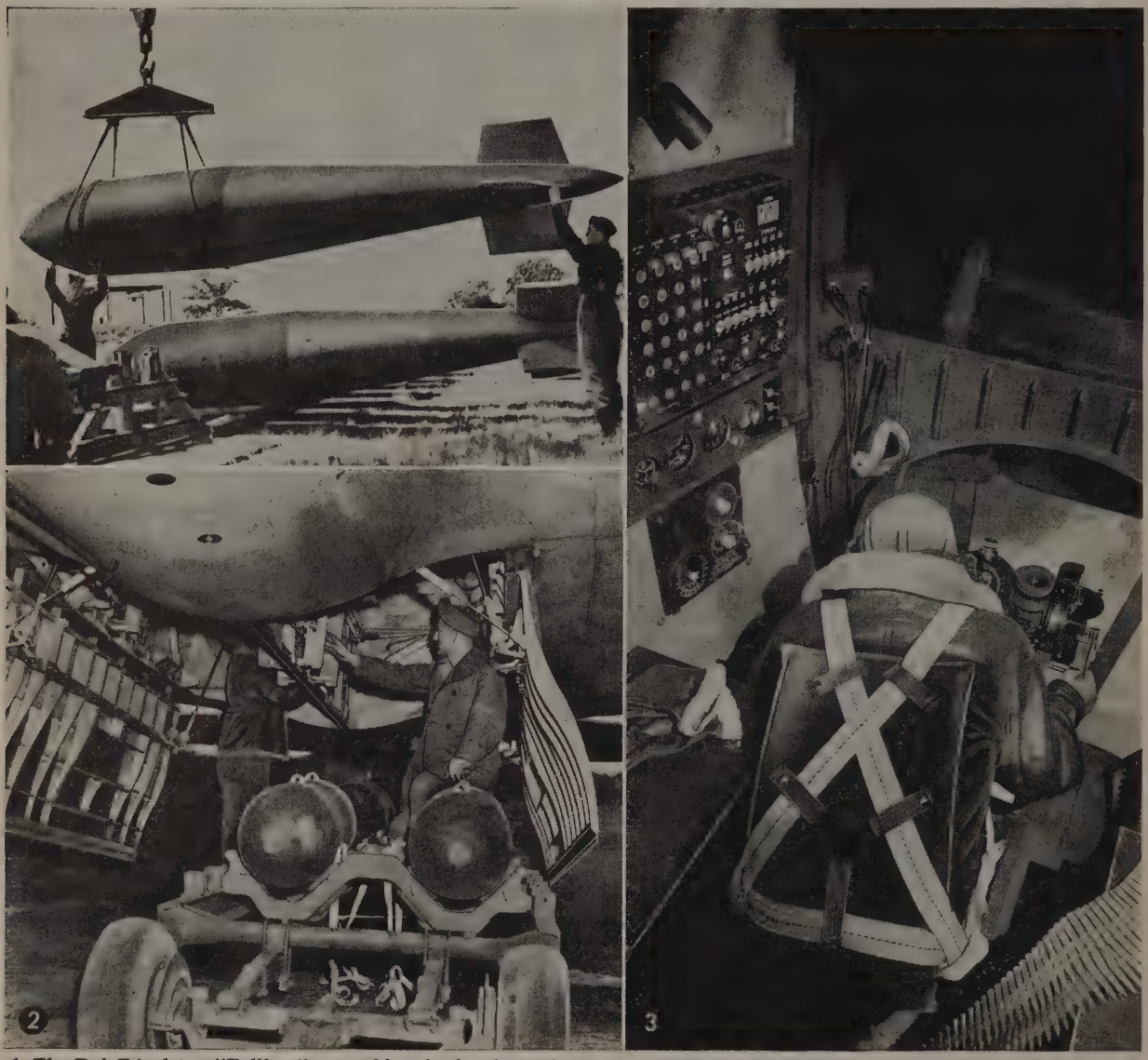
Bombs. The Allied airman's primary job was to bomb out of existence every industrial and military target in enemy territory. To accomplish this job, bomber planes dropped 2,697,473 tons of bombs on Nazi-held Europe. Before the atomic bomb, the B-29 fleet dropped 169,421 tons of bombs on Japan (*see* Atomic Bomb).

Bomb technicians enlarged the early 500-pound bomb through successive stages until in 1945 they introduced the 11-ton "Volcano." Emphasizing obliterative power rather than fragmentation damage, they developed a thin-walled bomb with an explosive charge amounting to 75 per cent of the total weight. The new RDX largely supplanted TNT as the bomb explosive.

Where fire would cause the most damage, bombers dropped incendiary bombs. Loaded with phosphorus, magnesium, thermite, or jellied gasoline, they ranged in weight from 2 to 500 pounds. Parachute bombs exploded after a low-flying bomber was safely out of range. They scattered a deadly hail of fragments over the heads of troop concentrations.

Bor, General. Soon after the fall of Poland in 1939, Tadeusz Komorowski became "Bor"—Polish for "forest." Deep in the woods, he rallied an underground army and harried the Nazis so relentlessly that they offered $1,500,000 for his capture. In 1944 Bor climaxed his career as leader of the underground by leading some 250,000 men in an uprising to free Warsaw. It took 63 days (August 1 to October 2) of fighting and slaughter for the Germans to force his surrender. In May 1945, American soldiers freed him from the Castle of Itter, in Austria. He then resumed command, given him in 1944, of all the armed forces of the Polish government in

BOMBERS RELEASE CONCENTRATED DESTRUCTION ON THE ENEMY



1. The R.A.F.'s 6-ton "Tallboy" resembles the fuselage of a small plane. The fins spin the bomb, making its flight more accurate. 2. Crewmen hoist demolition bombs into the belly of a B-17 Flying Fortress. 3. A Navy bombardier hunches over his Norden bombsight. The bombsight computes how far ahead the bomb must be dropped to "arc in" to the target.

KING GEORGE VI AND WAR LEADERS OF THE BRITISH EMPIRE

1. John Curtin, premier of Australia from 1941 until his death in 1945. 2. King George VI. 3. The Marquess of Linlithgow, viceroy of India, 1936-43. 4. Field Marshal Jan Smuts, premier of South Africa. 5. Mackenzie King, premier of Canada.

exile. He visited the United States in 1946.

Born 1898, at Skalat, near Lvov. In 1916, joined underground that revolted against Germans in Warsaw, 1918. Commanded cavalry brigade as a colonel, 1939.

Bradley, General Omar N. The "Doughboy's General," who sought to save lives while gaining ground, proved himself one of the great infantry commanders of the war. Commander of the U.S. 2d Corps in 1943, he broke the Axis grip on North Africa at Bizerte. In January 1944 he became senior commander of U.S. ground troops in Europe. From D-Day, he commanded the 12th Army Group (1st, 3d, 9th, and 15th armies). With this, the largest combat unit the U.S. Army had ever known, he smashed Germany on the west. In June 1945 he was appointed veterans administrator.

Born 1893, Clark, Mo. Graduated West Point, 1915. Served in Arizona, Washington, Montana, first World War. Taught, West Point, 1934–38. Became commandant, infantry school, Ft. Benning, Ga., 1941.

Bretton Woods plan. Representatives of 44 United Nations met at Bretton Woods, N. H., in July 1944 to draft plans for dealing with postwar international monetary and financial problems. Their plan to establish an International Monetary Fund and an International Bank for Reconstruction and Development was set in operation in March 1946 when the boards of the two institutions met in Savannah, Ga. The United States Congress had ratified the agreements in July 1945.

The Fund is intended to stabilize the value of national currencies and to facilitate foreign trade and exchange. Membership in it requires nations to fix the gold value of their currency and forbids changing this value without consulting with Fund officials. A nation may obtain from the Fund foreign currency, say dollars, to balance its international payments by depositing equivalent gold value in its own currency. Later it must buy back this currency with foreign currency or gold.

The Bank is a credit pool. It may lend money to nations or individuals for rehabilitation or industrial development use. Or it may guarantee loans from banks or private investors after investigating the borrower and receiving the guarantee of his government. The country whose currency is lent must also consent.

The Fund's capital is 7.3 billion dollars and the Bank's 7.6 billion dollars. Each nation's quota is based on its financial strength. Of the Bank's capital, only 20 per cent is paid in; the rest is subject to call if needed. Voting power in the control of Fund and Bank is in proportion to the member's subscription. The United States has the controlling vote in both.

British empire. In the years between the first World War and the second, Great Britain gave large measures of independence to members of the British Empire. The Statute of Westminster gave full autonomy to the Dominions. None could be compelled to aid Great Britain in peace or in war. Yet when Britain went to war against Germany, Sept. 3, 1939, the empire responded. Within a week, every member, except Eire, declared war on Germany and prepared to send economic and military support across the seas to Britain. (For accounts of the individual war efforts, *see* articles on the individual members of the British Empire.)

This combined war effort made Britain superior to Germany in both manpower and materials. But the vast extent of the empire was also a handicap. The empire forces were compelled to support garrisons in lands as widely separated as Australia and Malta, and to maintain supply lines into nearly every part of the world—in many instances, through enemy-held sea lanes.

The Axis soon took advantage of these weaknesses. In August 1940, the Italians seized British Somaliland and invaded Egypt in a drive on the Suez Canal. Across the world, in the Pacific, Japan struck at Hong Kong and Malaya, Dec. 7, 1941. By May 15 Japan held not only these rich prizes but also Burma, Borneo, New Guinea, and the Solomon and Gilbert islands. Japanese invasion forces stood at the thresholds of India and Australia.

The British possessions then received the full impact of Japan's propaganda campaign of "Asia for Asiatics." The Japanese expected that restless India would respond by rebelling against the British and joining Japan in driving them from the country. But India did not sever its empire ties. Even conquered Burma failed to give wholehearted support to Japan. Throughout the world, the British ties of empire survived the war.

The return of peace, however, showed the need of shaping the empire anew. The world-wide demand for self-rule led Britain to offer India full independence (*see* India). Britain also lifted its mandate from Trans-Jordan, and set it up as an independent kingdom. In an effort to solve the Palestine problem, Britain asked coöperative study of it by the United States.

STRENGTH OF THE BRITISH EMPIRE

	Area (Sq. Miles)	Population
In Europe:		
Great Britain and North Ireland (K)	93,374	46,098,000
Ireland (Eire) (D)	26,600	3,000,000
Others	419	450,000
In Asia:		
Burma (MBC)	260,000	14,655,000
Ceylon (C)	25,000	5,300,000
Indian Empire (MBC), excluding Burma	1,575,000	340,000,000
Palestine and Trans-Jordan (M)	45,170	1,645,000
Others	227,430	6,959,000
In Africa:		
Anglo-Egyptian Sudan (Co)	1,000,000	6,500,000
Kenya Colony and Protectorate (C & P)	224,960	3,000,000
Nigeria, incl. British Cameroons (C & P)	372,674	20,475,000
Nyasaland Protectorate (P)	37,600	1,600,000
Rhodesia (C)	437,950	2,290,000
Tanganyika Territory (M)	360,000	5,000,000
Uganda Protectorate (P)	94,000	3,500,000
Union of South Africa (D)	475,000	7,895,000
Others	801,724	7,539,000
In America:		
British Guiana (C)	89,480	300,000
Canada (D)	3,684,463	10,376,786
Newfoundland and Labrador (C)	162,734	269,000
Others	25,723	2,011,000
In Oceania:		
Australia (D)	2,974,581	6,630,000
New Zealand (D)	103,581	1,410,000
Others	208,537	1,276,000
Total	13,306,000	498,178,786

KEY

K—Kingdom
D—Dominion
C—Colony
M—Mandated Territory
P—Protectorate
Co—Condominium
MBC—Member British Commonwealth of Nations

Bulgaria. The most friendless nation in Europe after the first World War was Bulgaria. Victorious neighbors on three sides allied themselves to hold the territory they had gained from Bulgaria. This isolation virtually forced the Bulgars to depend on Germany for trade. They bought about half their imports from the Reich and sold half their exports to it.

This economic dependence brought political domination. When the war began in 1939 King Boris declared Bulgaria neutral, but looked to Germany for aid in regaining lost territories. In 1940 Bulgaria, aided by German pressure, received southern Dobruja from Rumania. In return, Bulgaria joined the Axis, March 1, 1941. Nazi troops promptly occupied Bulgaria. From there the Germans launched attacks in April on Greece and Yugoslavia. Bulgar troops served in the occupation forces.

Despite Nazi demands, King Boris refused to declare war on Russia, being aware that the Bulgarian people sympathized with their Slavic cousins. Then in 1943, after a violent interview with Hitler, Boris died. He was succeeded by his six-year-old son, Simeon II.

The Allies demanded that Bulgaria withdraw from the war. German control, however, kept Bulgaria in the war until Russian forces neared its borders in August 1944. Bulgaria then declared its neutrality. Russia declared war on the Bulgars on September 5, then granted an armistice on September 9. Russia saw to it that Communist influence dominated the government, and thousands of Axis sympathizers were executed.

BULGARIA'S TERRITORIAL CHANGES

The shaded portions of this map show the areas Bulgaria lost before and after the first World War. In an effort to regain them, Bulgaria joined Germany in 1914 and 1941.

The return of peace found Bulgaria faring better than most of its scarred neighbors. Except for bombed Sofia, it had suffered little damage. The Allies seemed willing that Bulgaria should retain southern Dobruja. The Communist-dominated regency looked to Poland and Russia to replace Germany in Bulgaria's trade.

Burma. When the Japanese conquered Burma in March 1942, they cut the only Allied supply route to China. This had run by rail from Rangoon to Lashio, and over the Burma Road to Kunming (*see* Burma Road). Gen. Harold Alexander and Lieut. Gen. Joseph Stilwell led their British and Chinese forces back to India.

The Allies then turned to use of air transport. In March 1943, Maj. Gen. Orde C. Wingate dropped an air-borne force of British Chindits in north central Burma and supplied them by air. In March 1944 more Chindits and an American-Chinese raiding force, Merrill's Marauders, were flown into north Burma by Col. Philip Cochran's First Air Commando Force. Meanwhile, American engineers blasted open a new Ledo Road (later Stilwell Road) from Assam in India to the Burma Road (for map, *see* China). The Japanese were driven from it in January 1945. By now, American successes in the Pacific had virtually cut off Japanese supply in Burma, and resistance weakened. The Allies took Mandalay March 20 and Rangoon May 3.

GETTING SUPPLIES BY PARACHUTE

Air-borne supplies enabled Merrill's Marauders to raid behind Japanese lines in Burmese jungles in 1944. Here a Marauder unpacks ammunition dropped to a dry river bed.

Thereafter Burmese nationalists resisted return of British rule, and reconstruction problems were enormous. Air bombing had blasted the industrial installations, and funds and materials for rebuilding were lacking.

BURMA ROAD. The Burma Road is a 1,445-mile highway stretching from a railhead at Lashio in Burma to Kunming, capital of Yunnan province in southwest China. Built and maintained largely by coolie labor, this 16-foot-wide mountainous road was long the only land route for moving war supplies to the Chinese Nationalist forces. After the Japanese occupied Burma in 1942, Allied pilots of the American 10th Air Force and the Army Transport Command flew supplies into China over the "hump" of the Himalayas, at altitudes of 18,000 to 22,000 feet. The Ledo, or Stilwell Road was built across north Burma from the Indian border to join the old Burma Road.

BYRNES, JAMES FRANCIS. Shrewd, genial, and capable, "Jimmy" Byrnes switched from home front to world front on July 2, 1945. On that day he succeeded E. R. Stettinius as secretary of state and stood in succession to President Truman. Byrnes then faced the task of promoting peace in the postwar world; but large responsibility had been his specialty. He served as associate justice of the U.S. Supreme Court, 1941–42; director of economic stabilization, 1942–43; and director of war mobilization and reconversion, 1943–45—a duty so important that he was often called "assistant president."

Born 1879, Charleston, S. C. Educated in public schools. Admitted to bar, 1903. Served as member, 62d to 68th Congresses (1911–25). Practised law, Spartanburg, S.C., 1925–31. Served as U.S. senator, 1931–41.

CAMOUFLAGE. In the first World War armies practised the art of camouflage (from the French *camouflуer*, meaning "to disguise") almost entirely in the front line. At sea, disguise consisted of breaking ship silhouettes with "dazzle" patterns of various kinds.

In the second World War these simple methods proved all but useless. At sea, radar and sound detectors could penetrate any disguise. On land, aerial photographs taken through special light filters detected painted and imitation objects; and toward the end, radar bomb sights proved effective. In an effort to escape Allied bombing, the Germans covered over some structures, and placed actual farm land and buildings on the covering, with a dummy near by to attract the bombers. They even covered a real lake and provided a dummy one in Hamburg; but Allied experts penetrated these disguises.

WARTIME SUPPLY ARTERY TO CHINA

The Burma Road wound over mountains higher than the Rockies. Almost the entire course lay along or over these ridges, except where it crossed a deep river gorge.

EXAMPLES OF CAMOUFLAGE ON OCEAN AND LAND

The troop transport is dazzle-painted to fool submarines (top). Look at it through half closed eyes and you will "see" several ships side by side. A "village" covers an aircraft factory at Santa Monica, Calif. This camouflage netting was removed in 1945 (bottom).

The most ambitious Allied attempt to deceive the enemy employed dummy rubber invasion craft, complete with rubber guns and tanks. These were inflated and sent forth in deceptive movements just before D-Day.

CANADA. When Great Britain went to war against Germany, Canada declared war on Sept. 10, 1939.

In 1940 it registered all men and women over 16 years of age for war service. The government pledged not to draft men for overseas, but a plebiscite reversed this in 1942. The armed forces expanded from a peacetime strength of some 5,700 to 750,000, including 42,460 women. Canada also trained 224,296 men of the empire air forces. The navy grew from 13 vessels in 1939 to some 700, chiefly corvettes and frigates for convoy. Canadian troops fought notably in the Netherlands and at Dieppe. Canada's war debt was about 7 billions. Its casualties were 102,954, of which 37,964 were killed, 53,073 were wounded, 2,866 were missing, and 9,051 were listed as prisoners. (For Canadian war expenditures, *see* Cost of War).

Canada and the United States coöperated in war measures. In 1941 Canada built a chain of air ports as links to Alaska, and in 1942 the Alaska-Canada highway was opened (*see* Alaska Military Highway; King, Mackenzie).

Canada nearly tripled its industrial output, producing ships, tanks, aircraft, and other arms. The war's end created need for markets to absorb new products from the swollen industries.

CASUALTIES. The battle losses in manpower which a belligerent nation sustains —the killed (or died of wounds and disease), the prisoners, and the missing —are known as military casualties. For the second World War, casualty figures in many cases have been incomplete, and it will take many years before final figures can be obtained, even for the victorious nations. For the defeated nations, which have lost many of their records, final figures may never be obtained.

The number killed in the second World War exceeded 9,500,000, according to conservative estimates (excluding underground fighters), as compared with a total of 8,538,315 for the first World War.

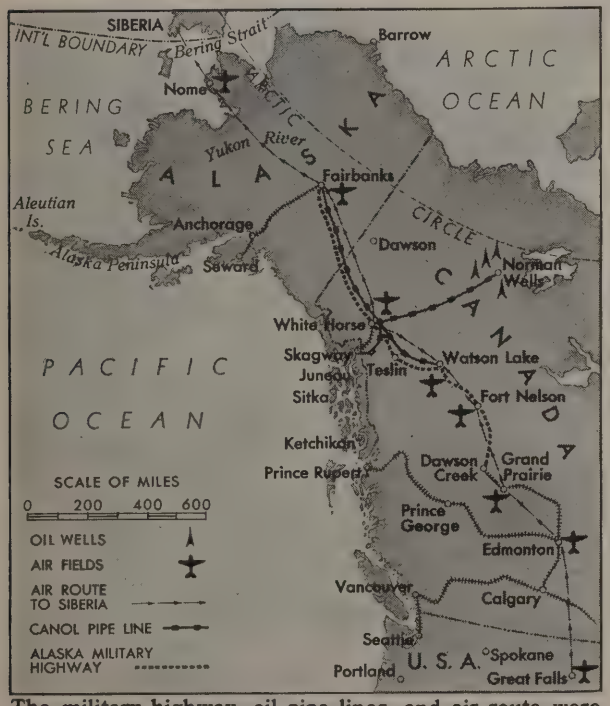
The United States suffered 1,112,845 casualties in the second World War, as compared with 364,800 in the first. According to estimates (1946), 295,867 were killed, 679,234 wounded, and 137,744 prisoners and missing. Of the total cas-

CAMOUFLAGE IN THE JUNGLE

A soldier in New Guinea wears a typical camouflage suit. Note how it is dappled to blend with light and shadow. Many suits are reversible and can match both winter and summer foliage.

CANADIANS ON WARTIME SEAS, ON THE BATTLEFRONT, AND ON THE HOME FRONT

1. This lookout aboard a corvette scans the Atlantic for submarines. Guarding merchant convoys (background) was one of Canada's chief duties. 2. Canada built over 120 corvettes like this to escort convoys. 3. Canadian 1st Army troops shell Nazi lines in north Germany with Bofors guns, 1945. 4. Tanks on assembly lines in a Montreal locomotive works.



The military highway, oil pipe lines, and air route were important links in the American campaigns in the Pacific.

ualties for the United States in the second World War, the Army sustained about 86 per cent; the rest were divided between the Navy, Marines, and Coast Guard, in the order named. The Army suffered by far its greatest loss of life in the European theater of war.

In addition to military casualties, millions of civilian casualties were inflicted in the second World War. The bombing toll in Britain alone, for example, exceeded 60,500 killed and 86,000 injured. The estimated toll for Germany and Japan was even higher. Poland and other Axis-occupied nations together suffered millions of casualties through brutal Axis mistreatment.

MILITARY CASUALTIES IN THE TWO WORLD WARS

Country	Killed and Died		Wounded		Prisoners and Missing	
	World War I	World War II	World War I	World War II	World War I	World War II
Austria-Hungary	*1,200,000*		*3,620,000*		*2,200,000*	
Belgium	13,716	7,000	44,686		34,659	70,000
British Empire	908,371	375,000	2,090,212	475,000	191,652	417,000
Bulgaria	*87,500*	*	*152,390*	*	*27,029*	*
China		♦		♦		♦
Finland		*50,000*		*125,000*		*
France	1,357,800	167,000	4,266,000	409,000	537,000	1,500,000‡
Germany	*1,773,700*	*3,250,000*	*4,216,058*	*	*1,152,800*	*8,841,000‡*
Greece	5,000	50,000	21,000	70,000	1,000	
Holland		6,000		20,000†		25,000†
Hungary		*75,000*		*		*
Italy	650,000	*200,000*	947,000	*240,000†*	600,000	*560,000†*
Japan	300	*1,500,000*	907	*	3	*35,000‡*
Montenegro	3,000		10,000		7,000	
Norway		1,000		*		*
Poland		125,000		141,000†		542,000†
Portugal	7,222		13,751		12,318	
Rumania	335,706	*100,000*	120,000	*20,000*	80,000	*594,000‡*
Russia	1,700,000	3,000,000	4,950,000	*	2,500,000	*
Serbia	45,000		133,148		152,958	
Turkey	*325,000*		*400,000*		*250,000*	
United States	126,000	371,638	234,300	679,234§	4,500	127,382
Yugoslavia		75,000		*		125,000‡
Total for Allies	5,152,115	4,427,638	12,831,004		4,121,090	
Total for Central Powers or Axis	*3,386,200*	*5,175,000*	*8,388,448*		*3,629,829*	

Casualties of countries belonging to the Central Powers in the first World War or to the Axis Powers in the second World War are shown in italic type.
*No reliable figure available †Broadly estimated ‡Prisoners only §Includes duplications, such as men wounded twice or more.
♦China estimated its total military casualties since 1937 to be more than 3,100,000

CENSORSHIP. In the United States, wartime censorship had one avowed aim: to keep helpful information from the enemy. Two groups, the Office of Censorship and the armed forces censoring officers, could censor all communications entering and leaving the country.

The Office of Censorship, established Dec. 19, 1941, and headed by Byron Price, searched international mail and cables for the intentional or inadvertent transmission of information and for communications between Axis agents. It monitored radio-telephone circuits and short-wave broadcasts, and censored the dispatches of United States correspondents for foreign newspapers.

To keep the enemy from learning apparently harmless facts that might add up to a valuable total, editors and broadcasters voluntarily adhered to "codes of wartime practises" set up by the Office of Censorship. The codes forbade the publication of certain news until it would give no aid to the Axis.

Outside the United States, members of the armed forces and war correspondents submitted their outgoing personal mail and their dispatches to the military censors. The censors cut out any fact that might be useful to Axis intelligence—the sender's exact whereabouts (and therefore the location of his army or fleet), secret weapons, casualty and damage figures, and battle results yet unknown to the enemy.

CHENNAULT, MAJOR GENERAL CLAIRE L. Chennault wrote blazing history in Burma skies as commander of the "Flying Tigers" (American Volunteer Group) for China in 1941–42 (*see* Flying Tigers). In one 90-day period, his "Tigers" lost but one plane for every 20 Japanese planes they destroyed by utilizing fighting tactics devised largely by Chennault. Retired from the U. S. Army for deafness, he had been Chiang Kai-shek's air adviser since 1937. In 1942 he was recalled to the Army and made chief of the U. S. air force in China (since 1943 known as 14th Air Force). He resigned in July 1945 and retired from active duty in October.

Born 1890, Commerce, Tex. After career as teacher, enlisted in U. S. Army Air Force, 1917. In the 1930's, headed army air act, 'Three Men on a Flying Trapeze'.

CHINA'S GENERALISSIMO

Chiang Kai-shek

CHINA. When Japan attacked China in 1937, the Chinese were split in armed conflict between the Nationalist (Kuomintang) government and the Communist party (Kunchantang).

But the invasion rallied China. From their "capital" Yenan in northern Shenshi, Communist armies harassed the Japanese with guerrilla warfare in the north and west. Most of the rest of China accepted the leadership of Chiang Kai-shek, commander of the Nationalist army and premier (he became president in 1943). Chiang's poorly equipped troops could not halt Japan's highly mechanized forces, which swept into the Yangtze "rice bowl," conquered China's industrial cities, and took the coast, blocking the Chinese from sea-borne supplies. But Chiang's "scorched earth" policy devastated each area before yielding, and his troops waged

THE SPRAWLING, MOUNTAIN-RIBBED "CHINA-BURMA-INDIA THEATER"

We see here how mountains cover nearly all southeastern Asia. Vast rivers twist down in gorges and jungles. This wilderness made the "CBI theater" a problem of supply. It was solved by the Burma-Ledo roads and air transport.

guerrilla warfare against Japanese occupation forces. As the Chinese fell back, they moved their factories into the interior, chiefly to Chungking, the wartime capital, on cliffs along the Yangtze. To overcome the coast blockade, Chinese coolies built the Burma Road over the Himalayas to Lashio (*see* Burma Road). For air cover for the road, the Chinese relied chiefly on the American Volunteer Group ("Flying Tigers") organized by Claire L. Chennault (*see* Chennault; Flying Tigers).

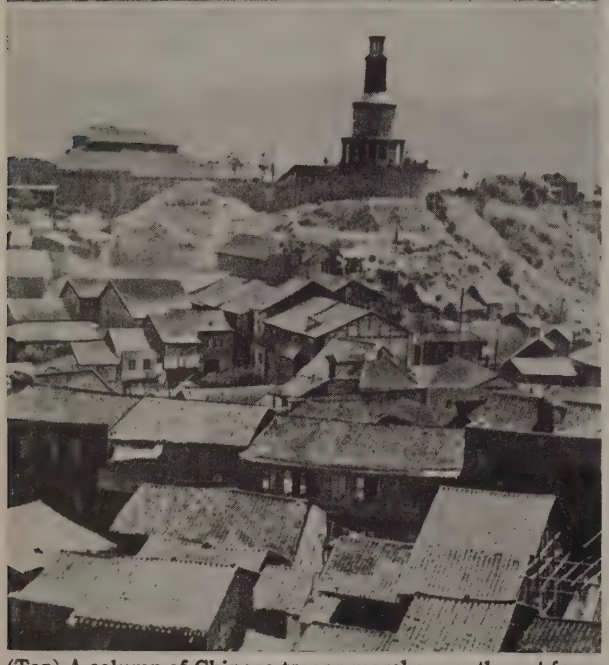
But with China's scanty supplies and inadequate forces, the Chinese could expect nothing better than a long exhausting war of attrition. They could only hope that Japan would wear itself out in the vastness of China.

Then the entrance of the United States and Great Britain into the war turned the tide. In January 1942 the Allies named Chiang chief of United Nations' forces in the China theater. The United States sent Lieut. Gen. Joseph Stilwell to be his chief of staff (*see* Stilwell). The Allies met with an early setback when Japan cut

CHINESE REPAIR AN AMERICAN LANDING FIELD

Lacking machines, wartime China used its great manpower. This crew, harnessed to a roller, smooths a landing strip. In the background, right, is an American supply truck.

CHINA CARRIES ON FROM CHUNGKING



(Top) A column of Chinese troops marches southwest from Chungking to the Salween front in 1942 in a futile effort to hold the Burma Road. The men wear sandals. (Bottom) Hastily built houses rise on the wreckage of Chungking, wartime capital, after almost daily bombing in 1942-43.

the Burma Road in April. But Stilwell began the successful training of Chinese armies, which he directed until succeeded in 1944 by Maj. Gen. Albert C. Wedemeyer.

Meanwhile, the Air Transport Command flew lend-lease supplies from India over the "hump" of the Himalayas to Kunming until American engineers built the Ledo (later Stilwell) Road in 1945 (*see* Air Warfare). The 14th Air Force, flying from fields built by peasant hand labor, bombed Japanese-held cities. American-trained Chinese troops recaptured the Burma Road in March 1945, and took Kowloon in May. They lost it briefly but regained it as a possible landing base for Allied forces. In May too gasoline supplies began to flow in the pipeline built by the Allies from Calcutta to China's border.

The end of the war brought China victory over Japan, but at enormous cost. Chinese army casualties since 1937 were estimated at more than 3,100,000. Scores of cities and villages were devastated. Floods swept through broken dikes, and famine spread. Inflation reached fantastic heights.

Meanwhile, civil conflict mounted. The Communists, abetted by the presence of Soviet troops in Manchuria, demanded control of that richest Chinese region. This led to civil war with the Nationalists. In an effort to stabilize the nation, the United States sent Gen. George C. Marshall as special envoy (*see* Marshall). He obtained a truce in 1946. When it failed, American "cease fire" teams achieved a semblance of order. Chiang moved the capital to Nanking, and planned agricultural and industrial projects with UNRRA help. But China's political strife promised to make the problem of reconstruction enormously hard.

CIANO, COUNT GALEAZZO. Count Ciano of Italy married Mussolini's eldest daughter, Edda, in 1930, and his fortunes rose and fell with those of his father-in-law. Mussolini made him his foreign minister in 1936 and groomed him as his successor. But when Allied victories in North Africa in 1943 doomed the Fascist empire, Ciano tried to flee. In the Fascist Grand Council in July 1943, he even voted to oust Mussolini. At Verona, on Jan. 10, 1944, a special Fascist tribunal sentenced Ciano to death for treason. He was executed the next day.

Born 1903, Leghorn, Italy. Entered diplomatic service, 1925. Minister of propaganda, 1935; foreign minister, 1936–43. His diaries, revealing Axis crimes and intrigues, published by his widow, 1945.

CLARK, GENERAL MARK WAYNE. In 1942, three weeks before U. S. forces struck North Africa, General Clark was smuggled there in a submarine and won French pledges of help. After the African and Sicilian campaigns, he led the 5th Army in its push up the Italian boot. The troops involved in a costly failure to cross the Rapido River in January 1944, later criticized his leadership; but success of the campaign gave him command of the Allied 15th Army Group in Italy in November 1944. He became American commander in Austria in June 1945.

Born 1896, Madison Barracks, N. Y., where his father, Colonel C. C. Clark, was post commander. Graduated West Point, 1917. Battalion commander, First World War. Named chief of staff for ground forces, May 1942; commander of U. S. ground forces in Britain, July 1942.

COAST GUARD. From manning large amphibious craft to insuring maritime safety and sanitation, the U. S. Coast Guard ably performed a multitude of war services under the Navy. Transferred from the Treasury Department by presidential order on Nov. 1, 1941, the Coast Guardsmen assumed new responsibilities in amphibious warfare. They landed men on the Mediterranean and Normandy beaches and on the Pacific islands.

Coast Guard sailors served aboard 775 cutters and 3,511 small craft. They manned and commanded 600 Army

and Navy ships and acted as beachmasters in combat landing areas. Coast Guard fliers aided survivors of sunken ships and aircraft forced down at sea.

Operating with Navy sea frontier forces, task forces, and the fleets, Coast Guard ships did continuous patrol and convoy work. They gave new meaning to the Coast Guard motto, *Semper Paratus*, "always ready."

Safety schools were conducted for the Merchant Marine and decontamination services for the Navy. The peacetime beach patrols, lookout stations, and weather observation stations on the seacoasts and the Great Lakes were maintained.

The Coast Guard had a wartime strength of 172,000. This was the smallest of the armed services. Vice-Adm. Russell R. Waesche, Coast Guard commandant, organized new units to release men for combat duty. These included the Women's Reserve (SPARS) and the Coast Guard Temporary Reserve, a civilian group which performed police and patrol duties. The Coast Guard suffered 824 casualties.

COMMANDOS. The British Commandos were a corps especially trained for sorties requiring daring and initiative. They learned to become dead shots with small arms, to use knives and garrotes, to kill by strangling or judo. Secretive and stealthy, they were subject to no regular discipline.

They sailed by night to Norway and France to destroy Nazi radar stations and important intelligence and supply posts. In North Africa, Sicily, and Italy, they went ashore before the invading forces, harassing and tying up large numbers of troops. Commando tactics were taught to American Rangers and Marauders.

COMMUNISM. Russians put communistic theory into practise through two agencies. The Soviet Union governed Russia and shaped official Russian foreign policy. The Comintern promoted the idea of world revolution which was inherent in Marxian doctrine.

MARAUDERS STALK JAP SNIPERS

Four American soldiers of the Commando-trained Merrill's Marauders advance warily along a Burma jungle trail. With fingers on triggers, they are ready to attack instantly.

The Comintern (full name, the Third, or Communist, International) was established in 1919 by Russian Communists. It was a nonofficial organization separate from the Russian government. In 1935 it modified its original aim and advised members in other countries to form "popular front" movements rather than to foster revolution. In 1943, in the stress of war, Premier Stalin ordered the Comintern to dissolve. Opposition to the Comintern was a rallying point for German propa-

COAST GUARD FERRIES TROOPS AND SUPPLIES TO INVASION BEACHES

Soldiers scramble down the landing nets of a Coast Guard attack transport to take their places in the landing craft alongside (left). At Iwo Jima, Coast Guardsmen and Marines unload supplies from landing ships (right).

ganda and action. The Rome-Berlin Axis pact of 1936 included an agreement to defend Europe against Communism. Germany and Japan signed an anti-Comintern pact in 1936. Hungary and Spain joined the anticommunist bloc in 1939.

CONFERENCES. During the second World War, conferences were held between the leaders of the Allied nations to organize their battle campaigns, war objectives, and peace plans.

Before the United States entered the war President Roosevelt and Prime Minister Churchill of Britain met on shipboard in the North Atlantic. They discussed the Lend-Lease Act and prepared an "Atlantic Charter," in which they pledged their efforts to destroy the Axis, free oppressed peoples and outlaw war as a means of settling world problems.

After the United States entered the war, the Allied leaders held many conferences for planning their campaigns against the Axis. The first was held in Washington soon after Pearl Harbor; the others are listed in the accompanying table. Chiang Kai-shek of China conferred with the other Allied leaders for the first time at Cairo, Egypt. A few days later Premier Stalin of Russia met with Roosevelt and Churchill at Tehran in Iran. The need for two meetings arose because Russian representatives refused to participate in a war conference with the Chinese.

Similar conferences of foreign ministers and delegates empowered to deal with specific problems were held, as shown in the table. The definite prospect of victory over Germany gave a postwar aspect to a conference of the Big Three held at Yalta in the Crimea in February 1945. This conference raised hopes that an effective method had been found for leading the world into satisfactory planning for the peace; and the hope persisted through a conference held at Potsdam, Germany, a suburb of Berlin, after Germany had surrendered. (At this conference, Stalin alone remained of the original Big Three. Roosevelt had been replaced by Truman before the meeting, and during it Churchill was succeeded as prime minister by Clement Attlee.)

ALLIED CONFERENCES—SECOND WORLD WAR

Conference	*Participants*	*Site*	*Date*
Atlantic Charter	Roosevelt, Churchill	Argentia, in Newfoundland	Aug. 2–14, 1941
Washington	Roosevelt, Churchill, representatives of 24 other United Nations	Washington, D. C.	Dec. 23–Jan. 1, 1942
Casablanca	Roosevelt, Churchill	Casablanca, French Morocco	Jan. 14–26, 1943
Quebec	Roosevelt, Churchill	Quebec, Canada	Aug. 11–24, 1943
Moscow	Hull, Eden, Molotov, Foo Ping-Sheung	Moscow, Russia	Oct. 19–30, 1943
Cairo	Roosevelt, Chiang Kai-shek, Churchill	Cairo, Egypt	Nov. 22–25, 1943
Tehran	Roosevelt, Churchill, Stalin	Tehran, Iran	Nov. 28–Dec. 1, 1943
Relief and Rehabilitation (UNRRA)	Representatives of 44 nations	{Washington, D.C. / Atlantic City, N.J.}	Nov. 9–Dec. 1, 1943
Bretton Woods	Representatives of 44 nations	Bretton Woods, N.H.	July 1–22, 1944
Dumbarton Oaks	United States, Great Britain, Russia, China	Washington, D.C.	Aug. 21–Oct. 4, 1944
Quebec	Roosevelt, Churchill	Quebec, Canada	Sept. 11–16, 1944
Moscow	Churchill, Stalin	Moscow, Russia	Oct. 9–18, 1944
International Civil Aviation	Representatives of 52 nations	Chicago, Ill.	Nov. 1–Dec. 7, 1944
Crimea	Roosevelt, Churchill, Stalin	Yalta, Russia	Feb. 4–12, 1945
San Francisco	Representatives of 50 United Nations	San Francisco, Calif.	April 25–June 26, 1945
Potsdam	Truman, Stalin, Churchill, Attlee	Cecilienhof near Potsdam, Germany	July 17–Aug. 2, 1945
London (Foreign Minister's Council)	Bevin, Molotov, Byrnes, Wang Shi Chiek, Bidault	London, England	Sept. 11–Oct. 2, 1945
Paris (Foreign Minister's Council)	Bevin, Molotov, Byrnes, Bidault	Paris, France	April 26–May 16, 1946
Twenty-one Nation Peace Conference	Representatives of 21 United Nations	Paris, France	July 29, 1946

ATLANTIC CROSSING: A CONVOY BOUND FOR NORTH AFRICA

An Allied convoy steams in geometrical formation over quiet seas to Oran and Algiers. The protecting escort vessels and aircraft keep constant watch against submarines.

But the wartime spirit of coöperation among the Allies did not carry over into peacetime. A council of foreign ministers in London split hopelessly on various questions concerning peace arrangements with Italy, Bulgaria, Rumania, Hungary, and Finland. The split held fast through other meetings in 1946, with Russia and its former western Allies moving farther and farther apart. (*See also* Peace.)

Convoy. A convoy is a group (ranging in number to 150) of merchant or troop ships sailing in wartime, protected by naval escorts. The convoyed ships are commanded by a convoy commodore, who rides on the guide merchantman. An escort commander has charge of the escort ships. He assumes the overall command when the convoy is attacked or the ships are scattered by storm.

Only ships which could outdistance enemy submarines ever dared sail unescorted. Such fast ocean liners as the *Queen Mary* and the *Queen Elizabeth*, converted into troop transports, and certain high-speed tankers were able to travel alone. Slower ships sailed in convoy under the best available protection.

DIRECT COST OF THE TWO WORLD WARS

Country	First World War to 1919*	Second World War to 1945†
United States and Allied Powers		
United States	$ 27,729,000,000	$317,600,000,000
Russia	22,593,950,000	192,000,000,000
British Empire		
Great Britain	44,029,012,000	120,000,000,000
Canada	1,665,576,000	6,814,000,000
Australia	1,437,419,000	6,500,000,000
New Zealand	378,750,000	164,400,000
South Africa	300,000,000	§
India	601,279,000	2,145,000,000‡
France	25,812,783,000	13,000,000,000
Belgium	1,154,467,000	3,600,000,000
Serbia	399,400,000	See Yugoslavia below
Yugoslavia	See Serbia above	220,000,000
Greece	270,000,000	165,000,000
China	§	§
Italy	12,313,998,000	Axis power (see below)
Japan	40,000,000	Axis power (see below)
Rumania	1,600,000,000	Axis power (see below)
Netherlands	Not engaged	1,000,000,000
Norway	Not engaged	93,000,000
Poland	Not a nation	2,000,000,000
Czechoslovakia	Not a nation	1,500,000,000
South American nations		9,278,000,000
Total	$140,325,634,000	$676,079,400,000
Germany and Associated Powers		
Germany	$ 37,775,000,000	$272,900,000,000
Austria-Hungary	20,622,960,000	§
Bulgaria	815,000,000	§
Italy	Allied power (see above)	94,000,000,000
Japan	Allied power (see above)	56,000,000,000
Rumania	Allied power (see above)	§
Turkey	1,430,000,000	Not engaged
Total	$ 60,642,960,000	$422,900,000,000
Grand Total	$200,968,594,000	$1,098,979,400,000

*Congressional Record, April 14, 1932.

†From reports prepared by American University and James H. Brady.

‡Through 1943 only.

§No authoritative figures available.

Every type of combat vessel did escort duty, but the destroyer escort and escort carrier were developed especially for this work. The carriers provided constant air patrols to drive lurking submarines from the vicinity of the ships. Radar also helped to rout the submarines. In the Atlantic, losses of convoyed ships amounting to 1 in 181 in 1941 were reduced in 1944 to 1 in 1,000. Only 3,064 of the 4,453,061 soldiers transported from the United States to Europe were lost at sea.

Cost of war. The total cost of a world war cannot be known for at least a generation after the war is over. The accompanying table shows that the second World War cost about five times as much as the first World War. But these figures show only military expenditures. Victorious nations continue to pay for a war many years after there is peace.

In 1918 the United States had spent $27,729,000,000 on the first World War. By 1936 expenditures had risen to $45,000,000,000 as the government paid off part of its war debt and cared for veterans.

In 1946 President Truman estimated that the cost of the second World War to the United States would rise from $317,600,000,000 (reported when the fighting stopped) to $347,000,000,000 by June 1947. This included spending $2,050,000,000 on United Nations' relief; $14,000,000,000 on occupation of foreign countries and national defense; and $4,208,000,000 on veterans.

Improved weapons of destruction made property damage and loss of life more costly in the second World War than in the first. The world lost many valuable contributors to society through military and civilian deaths (*see* Casualties). About $20,960,000,000 worth of property was destroyed in the first World War. The estimated cost of damage in the second World War is $800,000,000,000 and this does not include destruction in Japan, China, and Germany.

CRERAR, GENERAL HENRY. At the start of the second World War Crerar became Canada's senior combat officer, and in 1939–40 trained the Canadian troops in England. In 1940–41 he served in Canada as chief of general staff. In December 1941 he assumed overseas command of the 2d Canadian Division. In 1942 he became commander of the 1st Canadian Corps, which later fought in Sicily and Italy. In March 1944 he was made commander of the Canadian 1st Army, and led it in battle from D-Day until the conquest of Germany. This marked the first time in history that Canada had ever placed a separate army of its own on the field of war.

Born 1888, Hamilton, Ontario. Graduated Royal Military College, Kingston, 1910. Served as artillery officer, first World War; general staff officer, 1929–35.

CRITICAL MATERIALS. Most of us never notice the insulating parts made of mica in electrical apparatus. But if the supply of mica suddenly vanished, the nation would be badly off for such articles as radio condensers, spark plugs, and motor and generator brushes and commutators. Likewise few people gave much thought to tin until the Japanese conquest of Malaysia cut off the principal source of supply.

Even before the second World War, the American military authorities had classified such "key" materials as *essential*, and some of them as *critical* or *strategic*. A critical material was an essential one which was scarce, but might be supplied with special effort from domestic sources. A strategic material could be obtained only from abroad, and supply might be cut off by the adverse course of a war. This classification included ores of aluminum (bauxite), antimony, chromium, coconut shell, char, manganese, mercury, nickel, tin, and tungsten; quartz crystals and mica; and manila fiber, opium, quinine, rubber, and silk.

When war came, the government immediately took drastic steps to increase the supply of critical and strategic materials. Throughout industry, the materials were allocated on the basis of ever-changing military needs (*see also* Home Front). Scrap drives brought home the need for conserving such materials. Discarded toothpaste tubes and tin cans became important sources of tin. In one typical year (1944) the drives yielded 18,588,766 tons of metal scrap and 187,283 tons of tin cans and collapsible tubes. Civilian consumption was curbed by rationing.

Synthetic substitutes were developed wherever possible, notably for rubber. Plastics and nylon replaced metal and silk in many uses.

When Nazi submarines in the Caribbean Sea jeopardized the supply of bauxite (aluminum ore) from Surinam, the United States paid the extra cost of using lower-grade domestic ores. This helped increase production from 400,000 tons of ore yearly to 6,000,000 tons. The same bonus policy was used to gain production of many other metals from low-grade ores.

American scientists ranged far afield to find new sources of materials. For example, the radio industry needed quartz crystals to control tuning. To meet the skyrocketing demand, geologists and equipment were furnished to Brazil, and an ample supply was obtained. American aid expanded the Bolivian tin industry until the supply met minimum requirements.

Many substances which usually were plentiful became scarce because of enormous demand. Military use of cardboard packing drained the supply of wood pulp for paper, and paper for civilian use was scarce throughout the war. The situation would have been worse had it not been for waste paper drives. In 1944, for example, 6,959,000 tons were collected for conversion into wrapping paper and other coarse grades.

DARLAN, ADMIRAL JEAN. Darlan became commander in chief of the French navy in 1939. After France fell, he helped Germany. In 1941 he became heir presumptive to Pétain in the Vichy régime, and in April 1942 commander of all its armed forces. But in Algiers, November 1942, when the Americans had landed, he consented to coöperate with the Allies if Eisenhower would recognize him as chief of state in French North Africa. This agreement, negotiated by Eisenhower, caused the French there to disarm and saved many American lives. Darlan was assassinated in Algiers, Dec. 24, 1942.

Born 1881, Nérac, France. Entered French navy, 1902. Commanded naval guns on Western Front, first World War. Named chief of French naval staff, 1936.

D-DAY. In military planning the term D-Day is used to mean the first day of a large-scale operation, before an actual date is set. In the second World War, the most important of all D-Days was June 6, 1944.

On that D-Day, the Allied Expeditionary Force landed on the Normandy coast. Their D-Day objective was the strip of beach between Caen and Cherbourg; their eventual destination—Berlin.

Under a full moon, Allied airborne troops landed behind Nazi coast defenses. At dawn, Allied ships and planes were blasting beach installations. At 6:30 a.m., the first waves of infantry swarmed ashore. By nightfall, five American divisions and a large British force were strongly entrenched.

DE GAULLE, CHARLES. The day after Marshal Pétain asked Germany for an armistice, General de Gaulle flew to London. There, on June 18, 1940, he broadcast to the French people: "France has lost a battle, but France has not lost the war." He rallied French resistance, inspiring not only the French but the world with his belief that France would rise again.

De Gaulle won financial support from the British government for his Free French (later Fighting French) movement. He built up a French army of volunteers which fought independently but under control of the British. After the Americans invaded North Africa he joined Giraud in Algiers as co-president of the French Committee of National Liberation. Later he became its sole president and chief of the French armed forces.

De Gaulle returned to Paris, Aug. 25, 1944. The next day massed crowds acclaimed him. Although he had often clashed with other Allied leaders, the Allies on October 23 recognized his régime as the official government of France. In November 1945 a newly elected assembly confirmed his position as president of the provisional government. He advocated a middle of the road

program; but his opponents, particularly Communists, obstructed his policies and he resigned Jan. 20, 1946.

Born 1890, Lille. Educated at St. Cyr. Captured by Germans in first World War, tried five times to escape. In 1930's advocated mechanizing French army.

DENMARK. On May 31, 1939, Denmark and Germany signed a nonaggression pact. On April 9, 1940, the German army seized the neutral nation. That same day King Christian X surrendered his virtually defenseless land. On April 9 the United States took Denmark's island possession, Greenland, into protective custody (*see* Greenland). To win Danish good will, Germany permitted Denmark to keep its own government under Nazi supervision. But the Danes were relentless foes. So destructive was their underground that Germany imposed the Gestapo rule on Denmark in 1943. Continued Danish resistance won the praise of Allied commanders. After liberation on May 4, 1945, Denmark worked to rebuild its dairy industry and to restore foreign trade, which normally supports half Denmark's business.

DE VALERA. EAMON. His lifelong ideal of complete separation of Ireland from England dominated de Valera's foreign policy throughout the second World War. As premier of Eire in 1939, he proclaimed a course of strict neutrality; and he held Eire firmly in this course despite pressure by both Great Britain and the United States. The climax of his neutrality was a call of condolence at the German legation May 3, 1945, after Hitler was reported dead.

Born 1882, New York City; father Spanish, mother Irish. Educated in Ireland. Fought in Easter rebellion, 1916; imprisoned. Opposed treaty of 1921 as compromise; imprisoned by Free State in ensuing civil war. Entered Dail in 1927. Premier after 1937.

DEVERS. GENERAL JACOB L. As a colonel of field artillery, Devers had become an expert in mechanization in the 1930's. In 1939–40 he had mechanized Panama Canal defenses. In 1940–41 he had commanded Fort Bragg, N.C., and in 1941–43 he was chief of United States armored forces. In May 1943 he followed Lieut. Gen. F. M. Andrews as chief of U.S. Forces in the European theater. He headed the 6th Army Group invading France, and became chief of U.S. Ground Forces in 1945.

COMMANDOS MUSTER AFTER DIEPPE

Back on English soil, British Commandos line up to count their dead and missing. The men, exhausted and battered, have returned from a cross-channel thrust into Dieppe.

Born 1887, York, Pa. West Point, 1909. Fort Sill, 1917–19. Taught military tactics West Point, 1919–24.

DIEPPE. On Aug. 19, 1942, an Allied force raided the Normandy coast town of Dieppe, east of Le Havre, to test the strength of the German defenses and to experiment with landing operations. Some 6,000 men —mainly Canadians, with some British Commandos, Fighting French, and American Rangers—landed and fought their way inland under heavy fire. After nine hours of bloody fighting, the troops abandoned their heavy weapons and re-embarked.

The raid was costly in casualties—3,500 men were killed, wounded, or taken prisoner. But it taught the Allies the strength of the German defenses, and they planned accordingly for later operations.

HOMELESS WANDERERS OVER EUROPE'S ROADS

This picture was made in 1944 during the liberation of France. As Allied military vehicles roll forward, weary refugees plod back to their ruined homes. These were more fortunate than most displaced persons; they have been able to save some livestock.

DISPLACED PERSONS. Uncounted millions of men, women, and children were torn from their homes and scattered over alien lands by the second World War. The number in Europe alone

was estimated at over 40 million. The larger part of them were slave laborers brought from conquered countries. Others were victims of persecution and refugees from battle-torn areas. Many were killed or died from hunger, disease, and mistreatment.

After the war, military authorities and UNRRA shared the responsibility of repatriating the living. They established centers where the people were cared for. By September 1945 more than 5¼ million had been sent back from western Germany, and Russia reported the return of 5 million of its people. A year after V-E Day more than 1¼ million remained stranded. Into Germany flowed a new tide of displaced folk—6 million Germans who were evicted from Czechoslovakia and territory newly granted to Poland.

DIVISION INSIGNIA. *See* pages 66 and 67.

DOENITZ, GRAND ADMIRAL KARL. Doenitz, who had commanded a U-boat in the first World War, built the Nazi submarine fleet for the second conflict. He began secretly, before the world knew Germany was rearming. In the second World War he devised the "wolf pack" system of submarine attacks on convoys. In 1943 Hitler appointed him head of the navy. Though Doenitz belonged to a land-owning family and had been an officer in the German navy since 1910, he acted wholeheartedly with the Nazis. On March 13, 1944, he substituted for Hitler in a radio address. On May 1, 1945, he announced Hitler's death and his own succession as *Führer*. The Allies indicted him as a war criminal Oct. 18, 1945.

Born 1891, Berlin-Gruenau. Captured by British at sea off Malta, 1918; feigned insanity.

DOGS. Acting mainly as scouts and sentries, dogs performed useful tasks and many heroic acts for the armed forces. The Army used 19,000 of the 23,000 dogs donated by patriotic citizens. There were 5,808 dogs lost from all causes; 446 had to be destroyed after the war as incorrigible killers. The best dog was the German shepherd; other good ones were the Belgian sheep dog, collie, Doberman pinscher, and schnauzer. The army's physical requirements were: age, 1 to 5 years; weight, at least 50 pounds.

MARINE DOG SCENTS ENEMY SNIPER

His sensitive nose and keen ears alert, this German shepherd dog awaits the command of his Marine master to find the enemy hidden in the brush. Dogs were invaluable scouts in jungle campaigns, where human vision and hearing were limited.

DOOLITTLE, LIEUTENANT GENERAL JAMES. Famed as army test pilot and aviation engineer ever since 1917, "Jimmy" Doolittle became a lieutenant colonel in the U.S. Army Air Forces in January 1942. On April 18, he led the war's first bomb raid on Tokyo. He was promoted to brigadier general. In September he assumed command of the 12th Air Force in Africa, and in February 1943, of the Northwest African Strategic Air Force. From December to the end of the war, he headed the 8th Air Force in Europe and then in the Pacific area.

Born 1896, Alameda, Calif. Taught fliers, first World War. Sc.D., Mass. Inst. of Technology, 1925. Made aviation's 1st "blind" flight, 1929. Won speed, distance trophies. Made lieutenant general, 1944. Retired from Army, 1946.

ALLIED TROOPS WAIT FOR SHIPS ON DUNKIRK BEACHES

Standing in orderly queues, British and French troops look seaward for ships that will evacuate them to England. They are carrying their personal gear, but they have abandoned their heavy guns and mechanized equipment.

DUNKIRK. During the week of May 29–June 4, 1940, the Germans drove the Allied forces in Flanders back to Dunkirk on the French channel coast. A hastily assembled fleet of 200 French naval vessels, 220 British warships, and 650 tugs, yachts, and other civilian small craft from England picked up 337,130 British and French troops from Dunkirk's beaches. Each trip was made under heavy air bombardment. The evacuation commanded by Field Marshal John Gort and Gen. Harold Alexander, was protected by rear-guard action against the pursuing Germans. Although some Luftwaffe planes

broke through to strafe the beaches, the R.A.F. prevented large-scale attacks. The Allies lost all their supplies and virtually all their armament.

East Africa. When Italy entered the second World War, its forces in Ethiopia and Eritrea had no trouble driving the weak British garrison from British Somaliland in August 1940. But Britain countered in January 1941 by invading Eritrea and Ethiopia. Italian resistance collapsed by May. Haile Selassie, exiled since 1936, returned to the Ethiopian throne May 5, 1941. Though not a vital campaign, the East African victory increased British prestige, and released troops for other war theaters. East Africa provided the Allies with supplies of cotton, leather, rubber, and sisal, and depots for storing and assembling military equipment.

HOLDING THE "LIFE LINE OF EMPIRE" IN EGYPT

Entrenched in the desert, the British 8th Army halts Rommel's drive into Egypt at El Alamein, 1942. This stand saved the Suez Canal and turned the war in North Africa.

Economic Warfare. The Allies waged economic warfare to strengthen their own production and to shrivel enemy supplies. The Allies bought goods to prevent the enemy from buying them first; they traded for critical materials with goods they could spare. Thus, they outbid the Germans for the control of Turkish chrome ore. In Spain they bargained with oil to obtain the vital tungsten ore, wolfram.

Such agencies as the Foreign Economic Administration and the British Ministry of Economic Warfare waged this kind of war, deciding what trading activities were to be conducted in neutral countries (*see* Blockade; Critical Materials). They also had a voice in selecting industrial bombing targets.

Eden, Anthony. As Great Britain's foreign minister from 1935 to 1938, Anthony Eden stood for opposition to appeasement of aggressor nations. The majority of the cabinet was against him, and he saw his ideals consistently violated. Finally, in February 1938, he resigned, declaring: "Every concession to violence only weakens ability to resist." Shortly after Britain abandoned appeasement for war, Chamberlain recalled Eden to the cabinet as secretary for dominion affairs. In Churchill's war cabinet he was war secretary, 1940; foreign secretary, 1940–45.

Born 1897, Durham; family aristocratic and wealthy. Educated at Eton and Oxford. Left Eton to join army, 1915; became captain and brigade major. Conservative member of Parliament after 1923.

Egypt. When Italian troops swept into Egypt from Libya in 1940, Egypt severed relations with Italy as it had with Germany in 1939, without declaring war. For two years thereafter northern Egypt was a battleground (*see* War in Europe). War receded from Egypt in 1942, but the Allies retained air and naval bases here. Egypt declared war on the Axis Feb. 26, 1945. Unrest began with world peace, as Egyptian Nationalists demanded the removal of British forces from Egypt. But Britain insisted that troops must remain in the Nile area to guard the Suez Canal.

Eire. Prime Minister De Valera stated Eire's firm policy of neutrality when war broke out in 1939 (*see also* De Valera). Eire refused joint defenses with Ulster; denied British charges that German submarines obtained fuel in Eire's ports; and condoned German bombing of Dublin in 1941. As a neutral within 50 miles of England, Eire provided a haven for Axis spies. To provide security for D-Day plans, on March 18, 1944, all travel between Britain and Eire was banned. But after peace came Eire found itself still dependent on Britain for coal and manufactures, and upon British markets for its farm produce.

Eisenhower, General Dwight D. In the first World War Eisenhower did not get overseas, but he received a Distinguished Service Medal for "marked administra-

ALLIED COMMANDER IN CHIEF AND HIS AIDES

Seated, from left: Lieutenant General Simpson, General Patton, General Spaatz, General of the Army Eisenhower, General Bradley, General Hodges, and Lieutenant General Gerow. Back row, middle: Lieutenant General Smith, General Eisenhower's chief of staff.

tive ability." Between wars he worked hard at a variety of administrative positions. He went to the Army Tank School. He learned to fly. He attended not only the Command and General Staff School and the War College, but the Army Industrial College.

By December 1941 he was a (temporary) brigadier general with a sound reputation as a staff officer. He was dynamic and likable. Chief of Staff Marshall called him to Washington to head the War Plans Division. Thereafter his rise was rapid. He became chief of U.S. Forces in Europe, June 1942; commander of Allied forces invading North Africa, November 1942; a 4-star general, February 1943. The following December he was named Allied commander for the invasion of Europe, and he carried through the assignment to victory.

Born 1890, Denison, Tex. Grew up in Abilene, Kan. West Point, 1915. Executive assistant to assistant secretary of war, 1929–33. On Philippines commission, 1935–39. Chief of staff of 3d Division, 9th Army Corps, 3d Army, 1940–41; of victorious Blue Army, Louisiana, 1941. Named 5-star general 1944. Succeeded General Marshall as army chief of staff, December 1945.

ESPIONAGE. In June 1941, climaxing a two-year spy hunt, Federal Bureau of Investigation men arrested 33 members of a spy ring in New York City. Head of the ring was Frederick Duquesne, professional German spy. This case opened the FBI's wartime career as the agency responsible for controlling espionage in the United States. During the war the FBI secured approximately 100 convictions on spy charges. Among its most sensational captures were those of ten men landed from German submarines on United States shores for purposes of sabotage and espionage.

In every warring country and in many neutral ones secret agents fought a deadly undercover war. They collected information about army strength and troop movements, convoy sailings, and new weapons. They parachuted behind enemy lines to locate battle positions, to commit sabotage, and to get coöperation from underground organizations. The United States carried on such activities through Army and Navy intelligence units and the Office of Strategic Services.

A NAZI MISSION THAT FAILED

With three companions, the man entering this federal van landed on Long Island from a German submarine in June 1942. FBI agents arrested them within two weeks of their landing.

CARELESS TALK WAS DANGEROUS

Posters like this warned people not to talk about their work in defense factories or about troop movements and sailings. Foreign agents gathered information from such talk.

FINANCING WAR. When firing ceased in the second World War, the belligerent nations had spent more than a trillion dollars upon the struggle. Every involved nation had taxed its people heavily and gone deeply into debt by borrowing money. Many nations were so devastated they could not hope to pay off their debt. Only the victors, Great Britain, Russia, and the United States, had any prospect of doing this.

The United States spent $317,600,000,000 on the war, or about $2,300 for every person in the country (*see* Cost of War). This colossal sum was raised by taxation and by borrowing.

From 1942 to 1945 the United States raised $125,476,258,909, about one-third the cost of the war, through increased income taxes (individual and corporation); estate taxes; excise taxes on luxury articles; transportation taxes; and excess profit taxes. After the 1942 Revenue Act was passed, income taxes greatly increased. For example, a single person making $1,000 a year paid about $11 tax to the government in 1942, but in 1943 he had to pay $90. A married person with two dependents who made $3,000 a year paid about $29 income tax in 1942. In 1943 he paid $354.60.

Russia and Great Britain also increased the taxes of their citizens. England raised about $60,000,000,000, about one-half its total war cost, through taxes. Russia followed the "pay-as-you-go" plan of taxing industries and individuals, but eased the money cost by requiring unpaid collective effort.

FINANCING WAR
WORLD PUBLIC DEBTS 1944-45

United States Public Debt, June 1945*

Prewar Bonds, Postal Savings	$ 195,824,740.00
War Issue Bonds Treasury Bonds	106,448,403,950.00
United States Savings Bonds	45,585,588,646.30
Depositary Bonds	504,534,000.00
War Treasury Notes (short-term borrowing)	84,810,212,525.00
Miscellaneous Debts	21,137,623,548.63
TOTAL	$258,682,187,409.93

Estimated Public Debts of Other Leading Nations, 1944-45†

Russia	$ 22,040,000,000.00‡
Great Britain	90,375,930,000.00
Canada	11,298,362,018.00
Australia	7,606,033,150.00
France	28,340,360,000.00
Italy	21,671,936,400.00§
Japan	15,196,152,000.00
Germany	110,364,800,000.00

*End of fiscal year.
†Official sources, computed at mid-war dollar exchange rates for national currencies.
‡January 1946.
§Internal debt only.

For war emergencies, most countries borrowed money by issuing war bonds. Russia borrowed $22,040,000,000 in war bonds from its people. The United States borrowed money in three ways. The government sold individual citizens "E" bonds on favorable terms and obtained $39,342,000,000. "F" and "G" bonds with lower interest yield were sold to corporations for a total of $187,658,000,000. Eight war loan "drives" raised a total of $227,000,000,000.

By short-term borrowing, money was obtained from banks and corporation investment funds through sale of treasury notes and certificates of indebtedness which ran for a few months. By June 1945, this "floating" debt was $84,810,212,525.

Nations unable to borrow enough money from their people must borrow from other countries. Russia, England, and France, for example, obtained more than 42 billion dollars worth of lend-lease materials from the United States (*see* Lend-Lease).

FINLAND. During the Russian Revolution of 1917 Finland broke away from Russia, and on June 17, 1919, the Finnish diet established a republic. The peace terms placed the Finnish border within 16 miles of Leningrad, the former Russian capital.

When the second World War broke out, Russia sought to eliminate this weakness. In October 1939, Russia demanded the cession of several hundred square miles north of Leningrad, and a lease of the island of Hangö in the Gulf of Finland for a naval base. Finland refused; and on Nov. 30, 1939, Russia attacked.

At first the war went against the Russians; but in March they penetrated the strong Finnish Mannerheim Line north of Leningrad. On March 12, 1940, Finland was forced to make peace on Russia's terms. These included cession of the city of Vyborg with rich hydroelectric installations and timber and wood-pulp industries.

FINLAND'S "STRONG MAN"

Field Marshal Mannerheim

Four days after the Germans attacked Russia the Finns entered the war on the German side (June 26, 1941). They quickly reconquered their lost territory and aided Germany in the long blockade of Leningrad. But the tide of war turned, and in June 1944 the Russians again cracked the Mannerheim Line. Accepting defeat, the Finns signed a treaty of peace with Russia

FINNISH ARMY SCOUTS PATROL PETSAMO FRONT ON SKIS

The white winter uniforms of these Finns are striking examples of "natural camouflage." Patrols like this, scarcely visible in the snow, harried the unwieldy Russian army in 1940.

FLAME THROWERS CRUSH JAPANESE "LAST DITCH" STANDS

When Japanese refused to surrender, the Americans used flame throwers, as we see them doing (upper left) on Bougainville Island. Sometimes they used flame-throwing tanks (upper right). The lower picture shows a one-man flame thrower with a fuel tank on the man's back.

and Great Britain in Moscow Sept. 19, 1944. Finland ceded to Russia western Karelia and the Petsamo area on the Arctic, with its port and rich nickel mines. It leased to Russia its naval base near Helsinki, the Finnish capital; and promised to pay in six yearly instalments an indemnity of $300,000,000. During the winter the Finns drove the Germans into Norway. On March 3, 1945, Finland formally declared war on Germany. The treaty with Russia and Britain had guaranteed Finland's political independence; but the terms reduced the country practically to a satellite of Russia.

FLAME THROWER. Used by all armies, but most effectively by U.S. troops in the Pacific, the flame thrower was a devastating weapon for short-range attacks. U.S. Army ordnance developed various incendiary mixtures. The most potent was "pyrogel," a combination of jellied gasoline and magnesium. The flaming mixture reached its target in a partially consumed, adhesive state. Clinging and spattering, it burned with great heat.

The M-2 pack-type flame thrower consisted of a two-triggered gun and a tank arrangement containing the fuel and a pressure agent, usually nitrogen or compressed air. The soldier, advancing on an enemy pillbox or foxhole, pulled the triggers in two-second bursts. One trigger released the stream, the other ignited it. He fired about eight bursts, at ranges up to 180 feet, then retreated to reload.

The flame-throwing tank was an ordinary medium tank equipped with flame-throwing apparatus. The gun had a range of 450 feet, and the fuel was towed in an armored trailer which could be jettisoned.

FLYING TIGERS. In 1941 a number of former army and navy pilots formed the American Volunteer Group ("Flying Tigers") to fight for China. Led by Capt. (later Maj. Gen.) Claire L. Chennault, the AVG flew 50 planes. The group shot down 284 Japanese planes

FLYING TIGER LEADER AND HIS PILOTS AND PLANES

Major General Claire L. Chennault, Flying Tiger commander and later head of the 14th Air Force (left). AVG pilots laugh with Chinese ground-crew men after a successful mission against the Japanese (right).

and destroyed 100 on the ground. The Flying Tigers were disbanded in July 1942, and its duties, members, and nickname were taken over by the American 14th Air Force.

Food. The impact of war instantly raised tremendous problems of food supply, beginning at the sources on the farms, orchards, and ranches of the land. All producers were asked for unprecedented output. At the same time sons and helpers were being taken for military service, the supply of equipment was drastically limited, and selling prices were closely controlled.

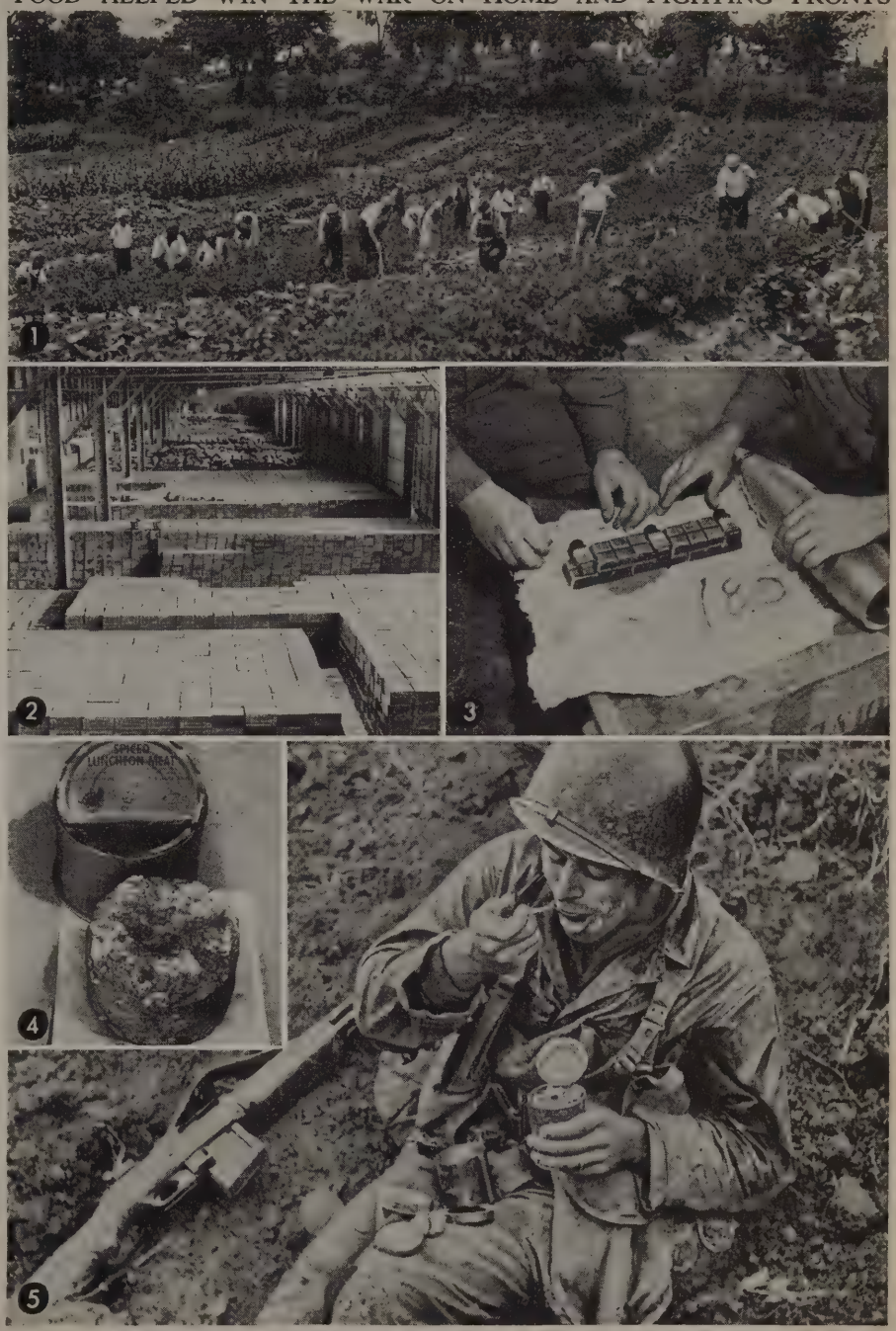
Devoted effort and ingenuity on the part of the producers themselves overcame these difficulties and provided the food demanded (*see* Home Front). Equally challenging problems arose, however, in processing and transporting food, because of the world-wide scale of war operations.

Tremendously increased tonnages had to be moved thousands of miles, although truck and railroad capacity at home and ocean shipping abroad were overburdened with military demands, and shipping was subject to constant, heavy war losses (*see* Shipping). Only one solution was possible. Food had to be processed to get the utmost in food *value* compressed into the least possible *space*, and to reduce to a minimum the need for refrigeration and special handling.

The first expedient used was dehydration, or drastic drying of such foods as eggs, milk, butter, soups, meat, vegetables, and fruit. Now the same food value could be carried in from one-fourth to one-tenth the cargo space formerly required for raw foods. Also the process killed enzymes, or ripening agents, which cause spoilage.

By 1943 compression was added to dehydration. Dehydrated food was either heated or frozen and then subjected to high pressure. This "debulked" the food by removing air. With the air gone, oxidation, one of the chief factors in spoiling, was less likely to occur. Cellophane wrapping could be substituted for tin cans. Compression reduced cargo space requirements of dried foods 35 to 75 per cent. A dozen compressed eggs could be carried in the space required for two eggs in their

FOOD HELPED WIN THE WAR ON HOME AND FIGHTING FRONTS



1. Victory gardeners raised their own vegetables to relieve wartime shortages. 2. Cases of corned beef from Argentina await shipment to Great Britain. 3. Chocolate bars and bottles of halazone are packed into shells to be fired over enemy lines to trapped soldiers. 4. Canned luncheon meat was common food. 5. A soldier dines on "C" rations.

REFUGEES LOOKING FORWARD TO THEIR SOUP

The Greek war refugees shown here cooked and served their own meals in this camp in the Middle East. Greek and British armies helped provide the food.

shells. A one-pound brick of compressed potatoes could provide 25 helpings.

These principles were applied in production of so-called combat rations. The "K" ration, for emergencies, consisted of three small paraffin-coated boxes. Each contained a meal—breakfast, lunch, or dinner—of concentrated, enriched food. Each item in each box was packaged separately. The three boxes together weighed less than two pounds, but the food contained 3,500 calories. "C" rations, issued to men under fire, contained canned meat products combined with vegetables, potatoes, and rice. The "10 in 1" ration was used when there was time to prepare food. Each unit contained enough canned meat, vegetables, fruits, and desserts for ten men.

To increase production of food and meet other wartime food problems, President Roosevelt in March 1943 established a War Food Administration. The OPA instituted rationing to ensure fair distribution of available food supplies among civilians (*see* Home Front). Each summer victory gardens in yards, vacant lots, and city parks met some deficiencies in commercial supply.

By 1944 United States production was 38 per cent higher than the average for 1935–39. But each soldier was eating half again as much as a civilian, and twice as much meat and dairy products. The supply to Allied civilian populations also imposed a heavy drain. In 1942 lend-lease shipments took about 7 per cent of the livestock and 8 per cent of the crops. In 1943 and 1944 about 12 per cent of raw and processed foods went to the Allies.

Overseas the food situation steadily became worse. By the spring of 1943, the people in Europe and Asia were becoming hungrier and hungrier. Only unified action by the least-damaged countries could avert ultimate famine on a world-wide scale.

To help alleviate the need, President Roosevelt set up an Office of Relief and Rehabilitation Operations (OFRRO) Dec. 4, 1942. Herbert H. Lehman resigned as governor of New York to direct it. In November 1943, this was merged in the United Nations Relief and Rehabilitation Administration (*see* UNRRA). But the threat of famine continued to mount. The plight of children aroused the greatest concern. Of 70,000 children examined in Prague, about 40 per cent showed signs of lung disease. In Greece approximately three-fourths of the children were growing up diseased and stunted by lack of food.

In March 1946 President Truman appointed a Famine Emergency Committee with Herbert Hoover as honorary chairman. After visiting 25 countries, Hoover reported that about 100,000,000 Europeans were living on diets containing only half the calorie value of the average American diet.

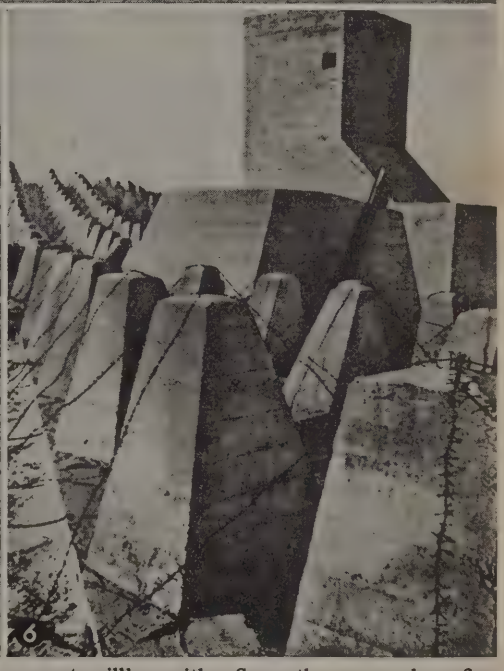
In April 1946 the United States government adopted measures to save grain and flour. This limited production of wheat flour by millers and its use by food manufacturers to 75 per cent of the 1945 output. To attract stored wheat from the farms, a bonus of 30 cents a bushel was offered on deliveries before May 25.

FORRESTAL, JAMES V. From bond salesman in 1916 Forrestal rose to president of a large New York brokerage firm in 1937. He was called to Washington as administrative assistant to Roosevelt in the early summer of 1940. In August he became undersecretary of the Navy, in charge of procuring materials for shipbuilding. Thus he had a major part in creating the world's biggest fleet. He also helped to plan Army and Navy control of radio during the war and served on the War Manpower Commission. On May 19, 1944, he was sworn in as secretary of the navy to succeed Frank Knox, who had died.

Born 1892, Beacon, N. Y. Graduated Princeton, 1915. From 1916 to 1940, employed by Dillon, Read & Co. (except for time as naval flier, first World War); vice-president of company, 1926; president, 1937–40.

FORTIFICATIONS. Types of fortifications used in the second World War ranged from the massive concrete and steel defenses of the Maginot and Siegfried Lines in Europe to the simple but deadly field fortifications used by the Japanese in defending their Pacific islands.

HOW EUROPEAN FORTS WERE OVERCOME



1. This German picture shows how German troops conquered a French concrete pillbox with a flame thrower and gunfire. 2 and 3. These were elaborate installations in the French Maginot Line. They proved useless in 1940. 4. The Germans built long lines of these "dragon's teeth" to stop tanks. But American engineers have blasted an opening, and a tank is going through. 5. These forts in St. Malo, France, were ruined by American bombs and artillery fire. 6. Here is another line of dragon's teeth and a blockhouse which did not stop the Americans.

Permanent fortifications, such as the Maginot Line, had miles of costly underground tunnels, concrete pill boxes, and barbed wire entanglements. But a good field army with modern weapons can break through such defenses. They proved useful only to delay an attack.

For delay, field fortifications were often as effective as permanent works. Usually they consisted of dirt and logs piled up for protection against small arms fire and shell and bomb fragments. Individuals dug fox holes or small shelter trenches.

Each type of fortification was arranged to give "defense in depth." The "front line" was counted upon only to delay an attack and break up the planned order and power of the assault. Then a counterattack might be launched from unimpaired rearward installations to oust the attackers.

FORTRESS EUROPE. Hitler boasted, before D-Day, that he had girded western Europe with a wall of steel and concrete capable of standing against any Allied invasion attempt. He called this sector *Festung Europa* (Fortress Europe).

Actually a series of barriers did exist, though they served only to delay temporarily the Allied advances. The wall began with the Gothic Line north of Rome (taking the form of gun emplacements along the Pyrenees), and followed the Atlantic coast line north and east to Denmark. The Atlantic wall was fortified only on easily invaded beaches. The Siegfried Line was to guard the German homeland.

DEFEAT CUT FRANCE IN HALF

After June 1940 more than half of France was occupied by Germany and Italy. Marshal Pétain ruled the rest from Vichy, under strict control by the Nazis.

The first wave of Allied troops that invaded Normandy blasted their way through the "protecting" wall.

FOXHOLE. To protect himself from bombs and artillery shells whenever he stopped for a few hours, the foot soldier dug a hole in the ground. His improvised shelter was called a "foxhole." He strengthened it, when time permitted, with wood and lined it with native materials to ward off the damp and cold.

FRANCE. After the first World War, French military leaders put their faith in defense. They built an elaborately fortified Maginot Line along France's eastern border facing Germany. When war became imminent in 1939, they extended the line with hastily built works from the region around Sedan northwestward along the Belgian border. After France fulfilled its pledge to Poland by declaring war Sept. 3, 1939, the French relied on the Maginot Line for defense and a war of attrition for victory. (*See also* Blockade; Great Britain.)

But France lacked unity. Many Frenchman feared

A MARINE DIGS IN AT GUADALCANAL

With bayonet and trench shovel, a young Marine in the Solomons campaign digs his foxhole. He has sandbags ready to fortify his temporary shelter.

THEIR CAREERS REFLECT A FRANCE DIVIDED AGAINST ITSELF

1. **Admiral François Darlan's twisted career of "collaborating" with Nazis and Allies ended in assassination in 1942. 2. Henri Philippe Pétain, chief of state in the Vichy régime, was imprisoned for treason in 1945. 3. Pierre Laval, the actual administrator of Vichy policies, was executed for treason in 1945. 4. General Charles de Gaulle led the Free French.**

socialism more than Germany, and would welcome defeat if it brought a strong authoritarian state. Even when war came, production lagged. After eight months, France had only about 500 tanks and 1,000 planes, which were dispersed ineffectually.

When Hitler struck at western Europe May 10, he first lured the French into Belgium, then struck his main blow at the Sedan area. The ensuing campaign, lasting only six weeks, swept over Paris June 14. Two days later the French cabinet voted to surrender. General Pétain succeeded Premier Reynaud and on June 17 asked for an armistice (*see* Pétain).

When France fell the fiery chief of the French tank corps, General de Gaulle, escaped to London and organized "Free French" resistance forces in the French colonies (*see* de Gaulle). Meanwhile Britain tried to keep the French navy from German control. A French naval force near Oran, Algiers, refused Britain's demands, and on July 3 the English fired upon it, disposing of all but one vessel. France then severed diplomatic relations with Great Britain.

The armistice terms placed more than half of France under German occupation. Pétain established a new capital at Vichy, in the unoccupied zone, and declared the Third Republic at an end. Pierre Laval, ardent advocate of collaboration with Germany, became vice-premier, and with Pétain he began remaking France into a totalitarian state. Pétain removed Laval from office, December 1940, but was forced by Germany to accept him as chief of government, April 1942. Laval drafted skilled Frenchmen to work in Germany.

When the Allies invaded North Africa in November 1942, Pétain denounced them and broke off diplomatic relations with the United States. The Nazis occupied France's free zone and tried to seize the French fleet at Toulon; but the crews scuttled 51 ships. By this time France had a well-organized resistance force. It was called first *Le Maquis* ("the underbrush") and later the F.F.I. (French Forces of the Interior).

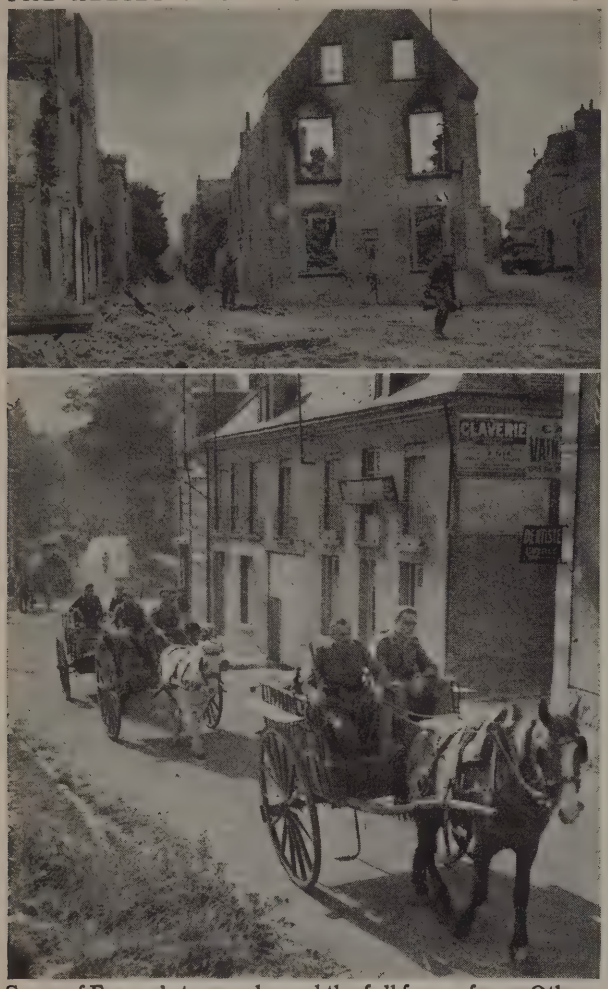
Liberation came swiftly to France after the Allied invasion started in June 1944. French and American forces took Paris August 24–25 after the F.F.I. had freed much of the city. The French government in Algiers moved to Paris and appointed de Gaulle president of a new provisional government. French troops with American equipment joined the fighting.

Now France faced a tremendous job of reconstruction. More than 2,500,000 Frenchmen were in Germany as prisoners of war, deportees, and "slave" laborers. Transportation facilities in northern France had been shattered by Allied bombing. There were desperate shortages of fuel and food, especially in the cities.

WAR-TORN FRANCE BRINGS GRIEF AND GLEE

Thousands of refugees, like the mother and child at left, fled from their homes when the German "blitzkrieg" swept France in 1940. Such throngs crowded the roads, impeding the desperate defensive deployment of the French army. Even while the tired refugees rested in their flight, Adolf Hitler (right) danced a jig to celebrate the fall of France.

THE ALLIES FOUND CONTRAST IN FRANCE



Some of France's towns showed the full force of war. Others looked as though the war had passed them by. In the upper picture, taken at St. Lô, U. S. Signal Corps wiremen walk past broken buildings in streets littered with rubble. In the lower picture Nazis ride in pony carts along a peaceful village lane toward Beaugency, where 20,000 surrendered.

After Germany surrendered, the French on Oct. 21, 1945, elected an assembly. In it the Communists had 142 seats, the *Mouvemente Republicaine Populaire* (center, Catholic) 140, and the Socialists 133. All parties united to elect de Gaulle president, but only the M.R.P. supported him. After eight months of friction de Gaulle resigned Jan. 20, 1946, and the assembly elected Felix Gouin, a Socialist, president.

In April the assembly proposed a constitution designed to favor Communism. It provided for a strong one-chamber legislature and weak presidential power. But now France swung to the right. On May 5 the people voted against the new constitution. On June 2 they elected a new assembly, with 162 M.R.P. members, 149 Communists, and 125 Socialists. The new assembly elected as president Georges Bidault, M.R.P. leader.

Of France's colonies, Equatorial Africa lined up with de Gaulle in 1940. Cameroon provided a Fighting French leader in Gen. Jacques Leclerc, commander of Tchad Territory, who in January 1943 marched across the Sahara to join Britain's 8th Army. Vichy controlled France's largest African colonies until the Allies freed them in 1942–43. Vichy agreed to Japanese occupation of French Indo-China in 1941; after the war this colony demanded independence. In 1941 the Fighting French promised Syria and Lebanon independence.

GERMANY. Official German documents presented by American prosecutors at the Nuremberg war crimes trial revealed that Germany had begun to rearm, defying the Versailles Treaty, even before Hitler rose to power. When Hitler became chancellor in 1933 he speeded armament, directing the German people to "choose guns instead of butter." At a cost of 36 billion dollars he welded from three to six million men and fleets of planes into the world's first mechanized army.

TERRITORIES DOMINATED BY GERMANY

Austria—March 12, 1938, by occupation.
Czechoslovakia—Oct. 1, 1938, and March 15, 1939, by treaty and occupation.
Poland—Sept. 27, 1939, by conquest.
Denmark—April 9, 1940, by occupation.
Norway—May 2, 1940, by conquest.
Luxemburg—May 10, 1940, by occupation.
Netherlands—May 14, 1940, by conquest.
Belgium—May 28, 1940, by conquest.
France—June 22, 1940, by conquest.
Hungary—November 20, 1940, by Axis alliance.
Rumania—October 10, 1940, by occupation.
Bulgaria—March 1, 1941, by occupation.
Yugoslavia—April 17, 1941, by conquest.
Greece—April 30, 1941, by conquest.

At five o'clock on the morning of Sept. 1, 1939, the mighty German army struck, invading Poland without warning. Nazi planes had already bombed Gdynia and other Polish cities by the time Hitler announced to the cheering Reichstag that war had begun. France and Britain responded by declaring war September 3; but

NAZI CONCENTRATION CAMP IN HOLLAND

Here is the moat and double electric fence which the Nazis built to discourage escape from their concentration camp at Vught. Within the camp—one of the Nazis' largest—were death chambers, crematoriums, and burial pits.

MEN WHO LED GERMANY TO TRIUMPH AND TO DEFEAT

1. **Joseph Goebbels was Nazi minister of propaganda. He committed suicide during the siege of Berlin.** 2. **General Erwin Rommel won success in North Africa, but was killed in France.** 3. **Adolf Hitler.** 4. **Hermann Goering, minister of aviation, promised that the Allies "could never bomb Berlin."** 5. **Heinrich Himmler, Gestapo chief, committed suicide in 1945.**

they elected to defend the Maginot Line and rely upon a blockade as their offensive weapon (*see* Blockade).

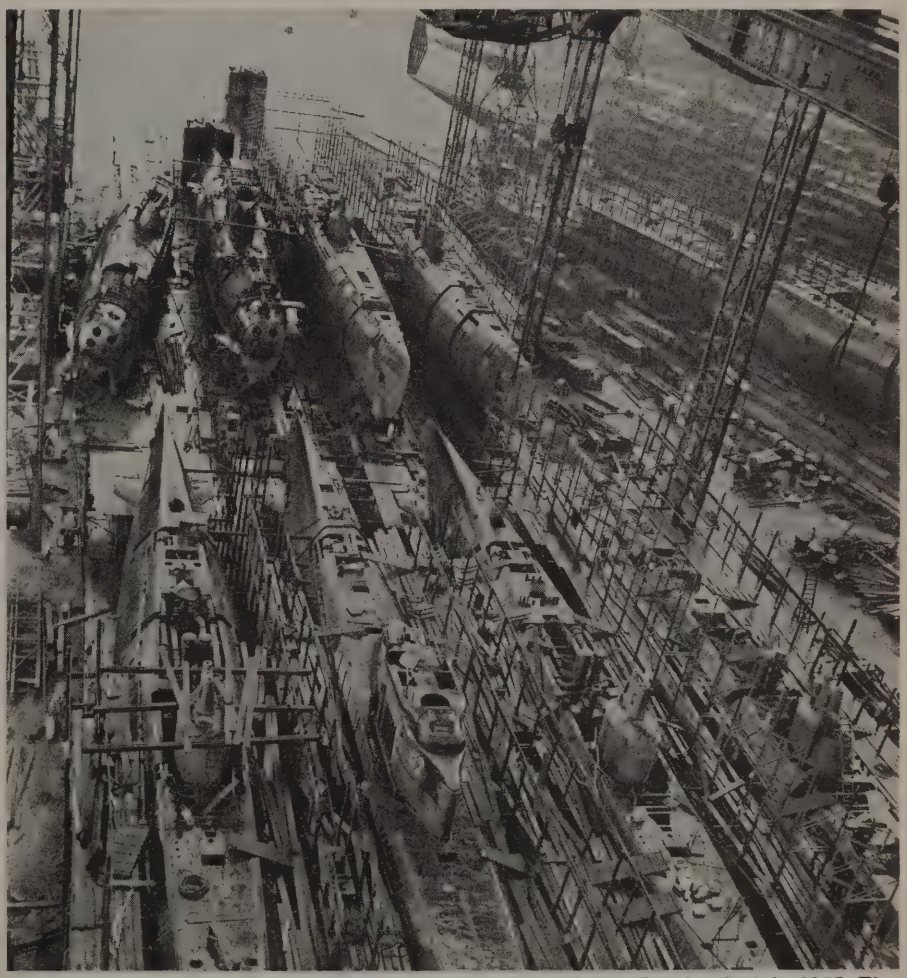
Germany was already geared for war. For six years Hitler had virtually enforced martial discipline and had built huge stocks of war supplies. Industry had been mobilized. The age for compulsory military training was lowered to 16, and the Germans had received food ration cards on August 27.

For the first year Germany seemed invincible. The Nazi forces crushed Poland in a blitzkrieg, ("lightning war") of four weeks. On April 9, 1940, the Germans invaded Denmark and Norway. On May 10 they attacked the Low Countries, Luxemburg, and France. By June 4 they had driven the British out of Europe at Dunkirk (*see* Dunkirk). By June 22 they had defeated France and had conquered nearly all western Europe. (For military details, *see* War in Europe.)

But the Nazis could not win undisputed world power until the British acknowledged defeat. The German *Luftwaffe* (air weapon or air force) attacked England in heavy strength September 7. But now the dive-bombing tactics which had proved paralyzingly effective against Poland and France met unexpected check. The R.A.F. inflicted devastating losses upon every daylight raid. The Germans then tried night bombing. But this too failed to break the British.

Unable to defeat England by bombing, Germany then gambled on conquering Russia. This would give

DEN OF NAZI U-BOAT "WOLF PACK" IN BREMEN HARBOR



These are some of the 40 submarines captured by the Allies in this dry dock in 1945. The U-boat was Germany's chief naval arm. Starting the war with an estimated 500 submarines, Germany built some 700 more. The Nazis lost over 700 U-boats in the war.

Germany the vast Russian resources needed to overcome Britain. But some German leaders feared to open war on a second front. On May 10, 1941, Rudolph Hess, deputy leader of the Nazi party, flew alone to Scotland, apparently to negotiate peace with England. But he was captured, and Hitler disclaimed him as being insane.

To prepare for the Russian adventure, Germany conquered Yugoslavia and Greece during the spring. Hungary, Rumania, and Bulgaria hastily became allies. In Africa, the Nazis pushed to the borders of Egypt.

On June 22 the Germans invaded Russia without warning. Within five months, the German armies had rolled almost to the Caucasus and Moscow, and victory seemed in sight. German power reached from the Arctic Circle to Egypt, and from France nearly to the Caspian Sea—in all, an area of about 4 million square miles.

While doing this the Nazis used savage tactics. They herded Jews and other so-called "inferiors" into concentration camps, and used starvation, torture, and mass murder to kill millions. In one camp at Oswiecim, Poland, 5 million people, chiefly Jews, perished.

The Nazis met the Allied blockade by ruthlessly stripping occupied countries of materials and food. They reduced Greeks and Poles especially to near-starvation diets. Pressure on neutral Sweden and Turkey obtained iron ore and chromium. Rumania supplied petroleum. Some 4 million men and women were brought from occupied countries to work as "slave labor" in the war industries of the Reich.

But the turn came when Germany seemed on the verge of success. In December 1941, Japan forced the United States into the war. At the same time the Russians launched a winter offensive and inflicted enormous losses on the Nazis. British and American air forces raided German industrial and commercial cities. Between Nov. 8, 1942, and May 13, 1943, Allied armies drove the Nazis from North Africa. On September 3 the Allies invaded the Italian peninsula and quickly won control of southern Italy. At sea, Allied naval and air power smashed

WHEN ALLIED BOMBS RAINED ON GERMANY

Allied bombs drove some German industry into underground factories. The top picture shows an airplane assembly unit in a salt mine near Engels, nearly 1,000 feet below ground. Here workers built from 40 to 50 Heinkel single jet-propelled planes a month. The lower photograph shows some of the damage which was inflicted on the heart of Berlin by 70,000 tons of Allied bombs. The area shown here is Potsdammer Platz.

Germany's chief naval weapon, the "wolf-pack" of U-boats (*see* Convoy; Navies; Shipping; Submarine).

Allied planes meanwhile bombed Hitler's "Fortress Europe" to cut down Nazi armament production. Essen, Hamburg, Dresden, and Berlin flamed in ruins. The Allies rained a total of 2,697,473 tons of bombs on the Nazis, destroying an estimated one-third of their industries. The Germans attempted retaliation with new weapons, especially V-bombs (*see* V-Bombs).

The beginning of the end for Nazi Germany came June 6, 1944. On that date American and British armies invaded Normandy, while the Russians drew near the Reich from the east. Losing faith in Hitler, several army officers tried to assassinate him by a bomb on July 20, but they failed. A winter of desperate fighting followed. Then on April 21, 1945, the Russians entered Berlin, where Hitler committed suicide April 30, two days before Berlin surrendered. Complete and unconditional surrender, accepted by Adm. Karl Doenitz, who had succeeded Hitler, was announced on May 8 at Reims.

Stripped of the gains it had seized since 1938, Germany emerged from the war as a shrunken nation of some 181,700 square miles, with a population of about 69,000,000. One-third was homeless. Added to these were the thousands expelled from Czechoslovakia and other liberated lands. Estimates of the soldiers and civilians killed ranged from 3,250,000 to 6,000,000.

The Allies divided Germany into four zones of occupation—American in the southwest, British in the northwest, French west of the Rhine, and Russian in the east. The Allies planned to seize German industrial equipment as reparations, and control science and industry to prevent building of another war machine. They also prosecuted German leaders as war criminals (*see* War Crimes). To help suppress Naziism, they barred most former Nazis from public office.

Reconstruction was hampered, however, by sharp divisions in policy (*see* Occupied Regions). Despite fears of German revival, all Europe needed coal from the Ruhr and many German manufactures. Thus Germany presented perplexing dilemmas rather than prospects for gaining peace.

GOEBBELS, PAUL JOSEPH. The Nazis shaped German thinking and opinion largely through the work of Goebbels, who became minister of propaganda and "public enlightenment" in 1933. He declared: "Propaganda has only one object, to conquer the masses." Goebbels insisted that people believe anything told repeatedly. He said: "My trade is hatred. It takes you further than any other emotion." The press, radio, and motion pictures could present only what he permitted.

Born 1897, in Rheydt, of peasant stock. Lame from birth; rejected for service in first World War. Studied at several universities; took Ph.D. at Heidelberg, 1921. Wrote poor books, unsuccessful plays. Became a Nazi, 1924; became *gauleiter* for Berlin, 1926. Committed suicide during siege of Berlin, April 1945.

GOERING, HERMANN. Reichsmarshal Goering built the Nazi air force. He also helped to organize the army, Gestapo, and concentration camps. As director of the Four-Year Plan, adopted 1936, he obtained raw materials and organized industries to help make Germany self-sufficient in war. He became immensely wealthy. When tried with war criminals in 1946, he was one of the few to maintain loyalty to Hitler and Naziism.

Born 1893, in Bavaria, of notable family; attended Karlsruhe cadet college. "Ace" in first World War; won highest award for valor; wounded; commanded "Flying Circus," 1918. Commercial pilot in Sweden, 1920; helped organize Nazi Storm Troops, 1922; committed to Swedish asylum, 1925. Nazi deputy in Reichstag, 1927; Reichstag president, 1933; named next in line to Hitler, 1939; surrendered in Austria, May 8, 1945.

GREAT BRITAIN. When Germany seized the remnant of Czechoslovakia on March 15, 1939, England abandoned its policy of appeasing the Axis. On March 31 England and France pledged armed aid to Poland if

HOME GUARDS PREPARE TO THROW BACK INVASION

In 1940, draft-exempt volunteers like these were trained to defend England against invasion. On a model village, an instructor shows techniques of street-fighting to a Home Guard unit. At first the Guard had only sporting rifles; later, weapons from America.

LEADERS OF GREAT BRITAIN IN WAR AND IN PEACE

1. Anthony Eden, foreign minister, was Churchill's chief aid. 2. General Bernard Montgomery drove the Nazi forces from Egypt in 1942, and became General Eisenhower's deputy commander in 1944. 3. Winston Churchill. 4. Clement Attlee, named prime minister by Labor government, 1945. 5. Ernest Bevin became foreign minister in Labor régime.

that nation were attacked. After Italy seized Albania on April 7, England and France extended their pledge to Greece, Rumania, and Turkey.

When German armies invaded Poland on September 1, Britain demanded that the troops be withdrawn. Receiving no reply from the Nazis, Britain declared war on Germany at 11:00 a.m. Sunday, September 3. Within a week all the British Empire except Eire (Irish Free State) joined England in the war. (For details of military events, *see* War in Europe.)

Britain set itself for "a war that will last three years or more." To unify the nation, the Liberal and Labor parties agreed to support the Conservative government then in office and to suspend elections until the war ended. Parliament empowered the government to control industry, transportation, and utilities.

WHEN BOMBS FELL ON LONDON FOR FIFTH YEAR

A civilian defense crew digs for victims who were buried when this home was shattered by a V-bomb in March 1945. Nazi planes and rockets hurled some 8,000 tons of explosives on England. The raids killed 60,585 British civilians and injured 86,175.

The British planned a largely defensive war, relying on a blockade to weaken Germany while Allied armies manned the Maginot Line to repel Nazi attacks (*see* Blockade; Fortifications). This strategy collapsed when the Germans swept north to seize Denmark and Norway in April 1940 and flanked the Maginot Line in May. Heroic action enabled England to evacuate from Dunkirk most of its expeditionary force of 12 divisions and a part of the northern French army (*see* Dunkirk). But the British lost virtually all their armament in the retreat. Yet Britain was determined to fight on. In an effort to keep France in the war, Churchill proposed June 16 that the French and British empires join together, with common citizenship. France refused, and that night asked Germany for peace.

Britain stood alone. The future? Winston Churchill,

1. Volunteers help to evacuate some of the 1,057,359 children removed from English cities to escape German air raids.
2. Britons sleep the night in a subway station to wait out a raid. The next morning they returned to their wartime jobs.
3. American airmen stationed in England ride past two of the Flying Fortresses that arrived in 1942 to help turn the tide.
4. Bofors 40-mm. antiaircraft guns like these, and tons of other armament, blanketed miles of English countryside in preparation for D-Day in 1944. 5. Londoners crowd Piccadilly Circus for V-E Day, May 8, 1945.

who had succeeded Neville Chamberlain as prime minister on May 10, said: "I have nothing to offer but blood, toil, tears, and sweat." England was almost unarmed, yet Churchill declared: "We shall never surrender. We shall fight on beaches; we shall fight in fields, streets, and hills . . . for we shall wage war."

Facing invasion, Britain called for a Home Guard of draft-exempt men. More than 400,000 volunteered at once, and this number rose ultimately to 1,727,095. England hastily built invasion defenses, and installed an undersea pipe line to provide a flame barrier around the coasts. Fearing the British navy, Germany elected to bomb England into surrender. But the R.A.F., though outnumbered 4 to 1 by the Nazis' 3,450 planes, inflicted huge losses on the Luftwaffe.

Meanwhile drastic measures were adopted to speed up war production. In 1940 the government was empowered to draft every property for war use. It compelled all able-bodied men and women to register for national service. Out of the 33 million Britons between the ages of 14 and 64, the armed forces took 5,000,000 men and 500,000 women. War industries employed 17,000,000 including over 7,000,000 women. The Women's Land Army of 80,000 largely took over English agriculture. Strikes were forbidden. Income tax rose to 50 per cent. In September 1940 England provided the United States with defense bases in the Caribbean in exchange for 50 overage American destroyers. In March 1941 the United States passed the Lend-Lease Act, which supplied 10 per cent of Britain's food and much of its armament (*see* Lend-Lease).

Since it had been driven off the continent, England concentrated on holding its "life line" through Gibraltar and the Suez Canal to the East. (*See also* Mediterranean Area; War in Europe.)

The besieged British also struck back at the Nazis in Europe. Special forces called Commandos raided German outposts (*see* Commandos). The R.A.F. bombed Berlin as early as August 1940, and began "saturation raids" delivered by 1,000 planes in 1942.

The real turn toward victory came in 1941, when Germany and Japan forced Russia and the United States into the war. Allied councils in Casablanca and elsewhere shaped the winning strategy (*see* Conferences). England became the base for invading North Africa in 1942 and for Europe in 1944. Through "reverse lend-lease," Britain provided 31 per cent of the supplies for the American armies in the European theater.

Victory came in 1945 at high cost. The war had taken 850,000 British military casualties, 147,000 civilian casualties, and had destroyed or damaged one-third of England's homes. Property damage totaled $4,800,000,000; ship damage, $920,000,000.

Facing grave problems of reconstruction, the British in July 1945 elected a Labor government. The new leaders promised wide social reforms, starting with nationalizing the coal industry and the Bank of England. To rebuild its export trade, Britain asked the United States for a 55-year loan of $3\frac{3}{4}$ billion dollars, and received it in 1946. It also received a 55-year loan of $1\frac{1}{4}$ billion dollars from Canada. But shortages and diversion of food to Europe kept Britain on rations.

WAR AND ITS AFTERMATH STRIKE HARD AT THE GREEK PEOPLE

The shriveled boy at the left was only one of many Greeks who suffered near-starvation when the Germans occupied and looted Greece, 1941-44. After liberation, inflated prices made food a serious problem again. At right, Athens police fire into the ranks of Communists (ELAS) during the civil war that racked Greece after liberation in October 1944.

GREECE. At 3:00 a.m. on Oct. 28, 1940, Italy issued an ultimatum to Greece, demanding strategic bases as the price of peace. Greece refused. At 5:00 a.m. an Italian force of some 200,000 swept down from Albania into Greece. Italy counted on its planes and mechanized weapons to *blitzkrieg* Greece. But mountainous northern Greece was unsuited to mechanized warfare. The Greek army, outnumbered nearly two to one, commanded the heights. Through the winter the Greeks riddled the Italian columns, slowed by snows, and drove them back into Albania. In April 1941, 58,000 Australian and New Zealand troops joined the Greeks. But on April 6 German forces drove down the Vardar Valley into Macedonia. By April 30 they had overwhelmed the Allies and had occupied Greece. On May 20 German paratroopers swarmed down on Crete, routing its Greek and British defenders by June 1.

Under harsh German occupation, Greece existed on a near-starvation diet, but guerrilla forces harried the Nazis relentlessly. On Sept. 24, 1944, British troops landed, liberating Greece by October 31. Civil war broke out between armed Communist sympathizers and British-supported Conservatives. After the British put down the revolt early in 1945, a plebiscite on the return of King George II was set for Sept. 1, 1946.

GREENLAND. Cold air masses sweeping east from the giant ice cap of Greenland, a Danish possession, largely affect Europe's weather. When the Nazis seized Denmark, they set up weather observation posts on Greenland in an effort to win "the battle of the weather" in sea and air operations. They also built bases for U-boats which preyed on British convoys.

Under the Act of Havana (1940), which provided for Western Hemisphere defense, the United States took protective custody of Greenland April 9, 1941. American forces landed soon after. In September the Coast Guard seized a German weather-broadcasting station. Others were found as late as 1944.

DANISH WEATHER POST IN SOUTHERN GREENLAND

This meteorological station at Julianehoab provided a key to European weather forecasts in peacetime. During the war the United States built small emergency weather observation posts throughout Greenland. Notice the airplane at the right.

During the war several thousand American troops served on Greenland, building weather stations, dry docks, and landing fields for transatlantic planes. Engineers installed pipe lines for fuel and built steam-heated wooden conduits to keep water pipes from freezing in temperatures that fell in some areas to 40 degrees below zero. Volunteers manned weather posts far inland, where they depended on supplies parachuted from planes. Their coördinated reports, broadcast to England, helped determine the timing of Allied bombing raids on military targets in Nazi-occupied Europe.

A DEADLY SHORT-RANGE WEAPON

This soldier is about to heave (not throw) a hand grenade. A spring lever, held tight by his hand, flies open when the grenade is free and fires the fuse.

GRENADE. For dealing with entrenched enemies at close range, nothing serves better than a hand grenade. It contains about ¾ of an ounce of trinitrocellulose, and it explodes into fragments which carry from 30 to 40 yards in every direction. A few may fly 100 yards or more. A trained soldier can hurl one more than 30 yards. It explodes 5 seconds after being thrown.

GUIDED MISSILES. Appearing late in the war,

guided missiles—radio and radar-controlled shells, bombs, and rockets—inaugurated what may be a new era in warfare (*see* subhead in Air Warfare).

HAAKON VII. When the Germans invaded Norway on April 9, 1940, the Norse king, Haakon VII, fled from Oslo to avoid capture. Despite offers of the Nazi-dominated Norwegian government, headed by traitorous Vidkun Quisling, Haakon refused to serve as a puppet king. He fell back with the retreating Norwegian army until he saw that the struggle was futile. He then escaped to England. There he supervised the Norwegian merchant fleet. His only son, Prince Olaf (born 1903), became commander of the Norwegian Forces of Liberation.

Born 1872, as Prince Charles of Denmark; called to Norway when union with Sweden dissolved, 1905. Insisted on a plebiscite before taking the throne; crowned king of Norway, 1906. Returned to Norway, 1945.

HALIFAX, EDWARD F.L.W., EARL OF. Early in 1941 Lord Halifax succeeded Lord Lothian as British ambassador to the United States. He arrived under somewhat of a cloud as "one of the men of Munich," for he had served as foreign secretary in Chamberlain's "appeasement cabinet." But Halifax had also worked for rearmament, and he retained the respect of Britain. He soon won high regard in the United States. His deeply religious nature and tough spiritual fiber won him reputation for integrity. He traveled widely and won many friends. All this helped him greatly in securing lend-lease aid for Britain in 1941.

Born 1880, Garrowby, Yorkshire; son of 2d Viscount Halifax; educated Eton and Oxford; major, first World War; minister of agriculture, 1926–31; viceroy of India, 1932–35; foreign secretary, 1939–41. Retired, 1946.

HALSEY, ADMIRAL WILLIAM F., JR. On Dec. 7, 1941, Adm. William F. Halsey was vice-admiral in command of aircraft carriers. After the Pearl Harbor attack, he led a task force in successful actions on the Marshall and Gilbert islands. In 1942 "Bull" Halsey became commander of all United States forces in the Southwest Pacific, with rank of full admiral. In 1944 he commanded the Third Fleet, which virtually destroyed the Japanese navy, and led the way to Tokyo Bay. Bluff, hard-hitting, he looked forward to riding "Hirohito's white horse." Commissioned a five-star admiral, 1945.

Born 1882, Elizabeth, N. J.; educated University of Virginia and Annapolis; lieutenant commander in Destroyer Force in first World War; Naval Intelligence, 1921; attended Pensacola Air School, won his wings, and became an instructor. Retired, 1945.

HERSHEY, BRIGADIER GENERAL LEWIS B. A veteran of the first World War, Hershey was appointed, as a colonel, acting director of Selective Service in 1940. That same year he was commissioned a brigadier general. Hershey supervised all the activities of conscription. Convinced that American public opinion would be the best enforcement of the Selective Service Act, he insisted that the draft be handled by local civilian boards.

Born 1893, on a farm near Angola, Ind. Taught school after graduating from high school; worked way through Tri-State and Indiana University. Joined National Guard; served in first World War; joined regular Army, 1919; taught military tactics in several schools; called to Washington, 1936, as executive secretary of Joint Army and Navy Selective Service Committee.

HESS, RUDOLPH. The Deputy Führer of the National Socialist party was Rudolph Hess. He became a Nazi in the early Munich days, and was completely devoted to his leader. When he was imprisoned with Hitler in 1923, after the unsuccessful "Beer Hall Putsch," he inspired the Führer to write 'Mein Kampf'. Later he became minister without portfolio, and then head of the party next to the Führer. Acted as Germany's representative in making the Rome-Berlin alliance. He was a fanatic Jew hater, and organized many pogroms and wholesale deportations. In May 1941, he flew alone to England, landing in Scotland by parachute. When captured, he said that he had brought peace terms, with a view to ending the war with England before Hitler opened his attack on Russia. He was interned in England for the duration of the war, and was pronounced insane by physicians. Later he boasted that his insanity was faked. At the end of the war, he was taken to Nuremberg for trial as a war criminal.

Born 1894, in Alexandria, Egypt. Returned to Germany at the age of 14; educated Godesburg. Fought in the first World War, at which time he was a socialist; was wounded in the "Beer Hall Putsch," and from that time was a violent anti-Semite and pro-National Socialist. Spent his first few years as a Nazi in plotting and inciting street fights. Held the party in line during the critical days after the "purge," and was considered a remarkable disciplinarian.

HIMMLER, HEINRICH. In 1934 Heinrich Himmler became chief of the Gestapo. By 1936 he was in complete charge of the German police system. Later as chief of the S.S. in all conquered Nazi territory, he formed a system of calculated mass murder. His "Blackshirts" and air squadrons were in command of the home front and the Wehrmacht inside Germany. He was notorious for gas chamber executions in the prison camps, which were established under his direction, and he ordered the infamous slaughter of hostages and destruction in Lidice, Czechoslovakia, in 1942. Attempted to escape in disguise after Germany's defeat; was captured, and committed suicide May 24, 1945.

Born 1900; educated Munich University; joined the National Socialist party, 1925; deputy Reich leader, 1927; Reich leader of S.S. Troops, 1929; member of Reichstag, 1930; chief of German police, 1936; minister of interior, 1943. Insignificant in appearance and, unlike most Nazi leaders, shunned publicity.

HIROHITO. The Shinto religion of Japan taught that Emperor Hirohito was a direct descendant of the sun goddess. Tradition forbade him active part in military or political affairs. He called his reign "Enlightened Peace." During the war, bombers were instructed not to destroy the royal palace. American occupation authorities stripped Hirohito of the "god-myth." He admitted that he knew of the attack on Pearl Harbor before it took place, and that he signed the declaration of war against the United States. Methodical, quiet, and thrifty, he was the nominal owner of all Japan.

EMPEROR HIROHITO OF JAPAN

Astride his favorite horse Shirayuki in the palace garden.

Born 1901, in Tokyo; son of Emperor Yoshihito; in accordance with Japanese custom, was entrusted to foster parents, Admiral Count Kawamura and his wife, until he was two years old. Educated by tutors; also Peers' School, School of Learning; toured Europe, 1921. Became emperor, 1926.

HODGES, GENERAL COURTNEY H. General Hodges, a four-star general at the end of the war, was named chief of infantry by General Marshall in 1941, and made major general. He achieved a distinguished record during the Louisiana maneuvers in 1943; sent to England and put in charge of the First Army by General Bradley. General Hodges led the First through its long, hard struggle from Normandy into Germany.

Born 1887, in Georgia; entered West Point at 17; failed in mathematics, dismissed; enlisted in army as private, 1906; captain at beginning of first World War; taught at West Point; assistant commandant of infantry at Fort Benning as lieutenant colonel, 1938.

HOME FRONT. When the Japanese attacked Pearl Harbor on Dec. 7, 1941, the United States was already partially mobilized for war. The fall of France in 1940 had alarmed the nation, and Congress had provided a large increase in appropriations. By the end of 1941 the total of defense appropriations had reached 64 billion.

About one-sixth of this amount had been spent when war was declared. Most of the money had gone into new factories and equipment for the manufacture of airplanes, tanks, munitions and guns, and ships. This had been done to serve two ends. The nation wanted, first of all, to build up its weapons and supplies for possible involvement in the war. It also wanted to aid the enemies of the Axis by supplying them with food and war materials and equipment under the lend-lease program (*see* Lend-Lease).

The United States had mobilized part of its fighting forces by the time it was drawn into the war. The draft law of 1940 had expanded the Army to 1½ million fighting men (*see* Selective Service). By the war's end about 11½ million men were in the armed forces of the nation. Employment in manufacturing industries increased tremendously from 8 million in June 1940 to nearly 13 million in November 1941. Most of this increase was in war production.

In all phases of preparedness, therefore, the United States was far enough along in its rearmament program to enable rapid mustering of strength, once war came.

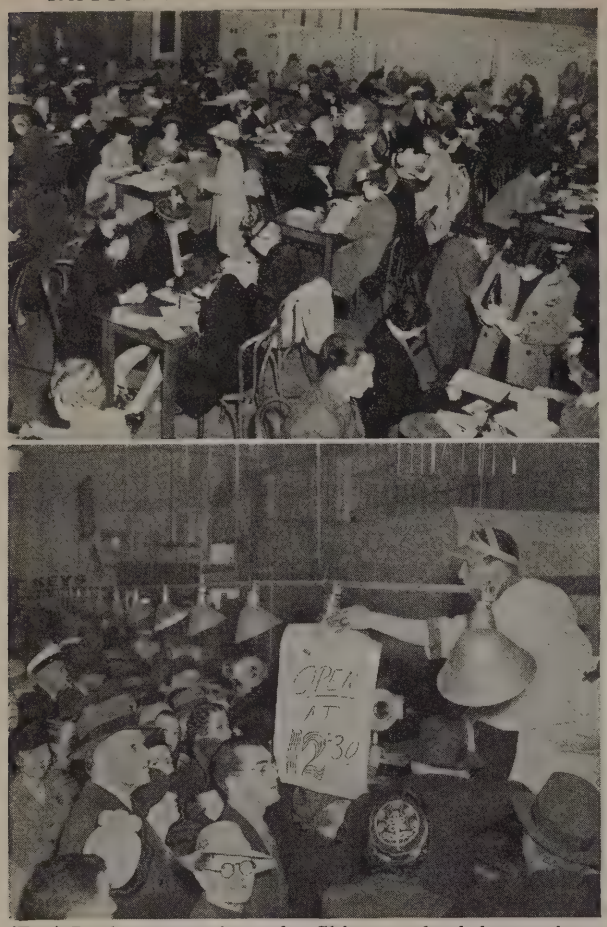
The Upsurge Started by Japan's Attack

The war on the American home front was a battle of production. Because the United States had the largest industrial capacity of any nation in the world it became the "arsenal of democracy"—equipping not only its own fighting forces but also in large part those of its

PART OF THE HOME FRONT BATTLE OF PRODUCTION

These girls are sewing army uniforms. Their task was a small part of the tremendous job of producing the matériel for the armed forces. Because such vast quantities of fabrics were needed to clothe the fighting forces, many items of civilian clothing were scarce.

RATIONING FOR THE HOME FOLKS



(Top) In the gymnasium of a Chicago school, housewives and an occasional man register with the ration board and receive ration coupon books for each member of the family. (Bottom) Buyers wait in a San Francisco market to purchase their allotment of meat, cheese, and butter.

Allies. One year after Pearl Harbor the American production of war materials equaled the combined production of Germany, Italy, and Japan. By the end of 1942, American factories had turned out 48,000 military aircraft and 56,000 tanks and self-propelled guns. And after two years of war the United States established unchallenged industrial supremacy for itself and its allies over the Axis.

America's Program of Industrial Conversion

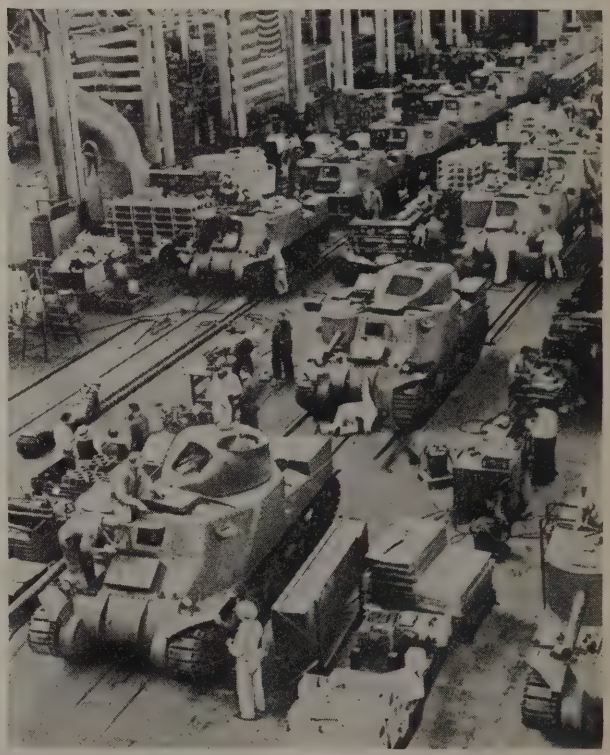
In order to achieve this supremacy in matériel, it was necessary to pursue a policy of industrial *conversion.* There was not enough time, manpower, or material to build all the nation's war industries from the ground up. Therefore existing industrial plants stopped their manufacture of civilian goods, rebuilt their old machinery or designed new equipment, and started to turn out war goods. The most outstanding example of conversion was the huge automobile industry. The manufacture of automobiles stopped within two months after the declaration of war. After retooling and setting up new production procedures—which followed the assembly-line manufacturing method so successful in peacetime—the automobile plants began to pour out a rising flood of aircraft, tanks, and other vehicles required in modern mechanical warfare.

To direct the country's productive efforts, several government agencies were established. One of these was the War Production Board (WPB) headed by Donald M. Nelson. The board was charged with determining how and where materials could be used most advantageously. This it did in two ways. *Allocations* assigned the scarce materials to certain industries. Then *priorities* named the order in which individual plants or operations within a particular industry could get the allocated materials.

Another key government agency for home-front wartime activities was the Office of Price Administration (OPA), under the chairmanship of Leon Henderson and later Chester Bowles. The early purpose of this agency, which had been created before the United States went to war, was to control the prices of materials vital to the production of both civilian and war goods. Shortly after the outbreak of war, however, living costs mounted so rapidly under inflationary pressure that the agency was also empowered to "freeze" all retail prices and rents at the levels of March 1942, which were set as ceilings.

A third agency—the War Manpower Commission (WMC) under Paul V. McNutt—was charged with the important and difficult task of apportioning the nation's manpower, after the needs of the armed services were

BUILDING THE "LAND BATTLESHIPS"



Workmen put the finishing touches on medium tanks in a Detroit factory. When automobile makers switched to the manufacture of tanks, they retained their peacetime assembly-line methods.

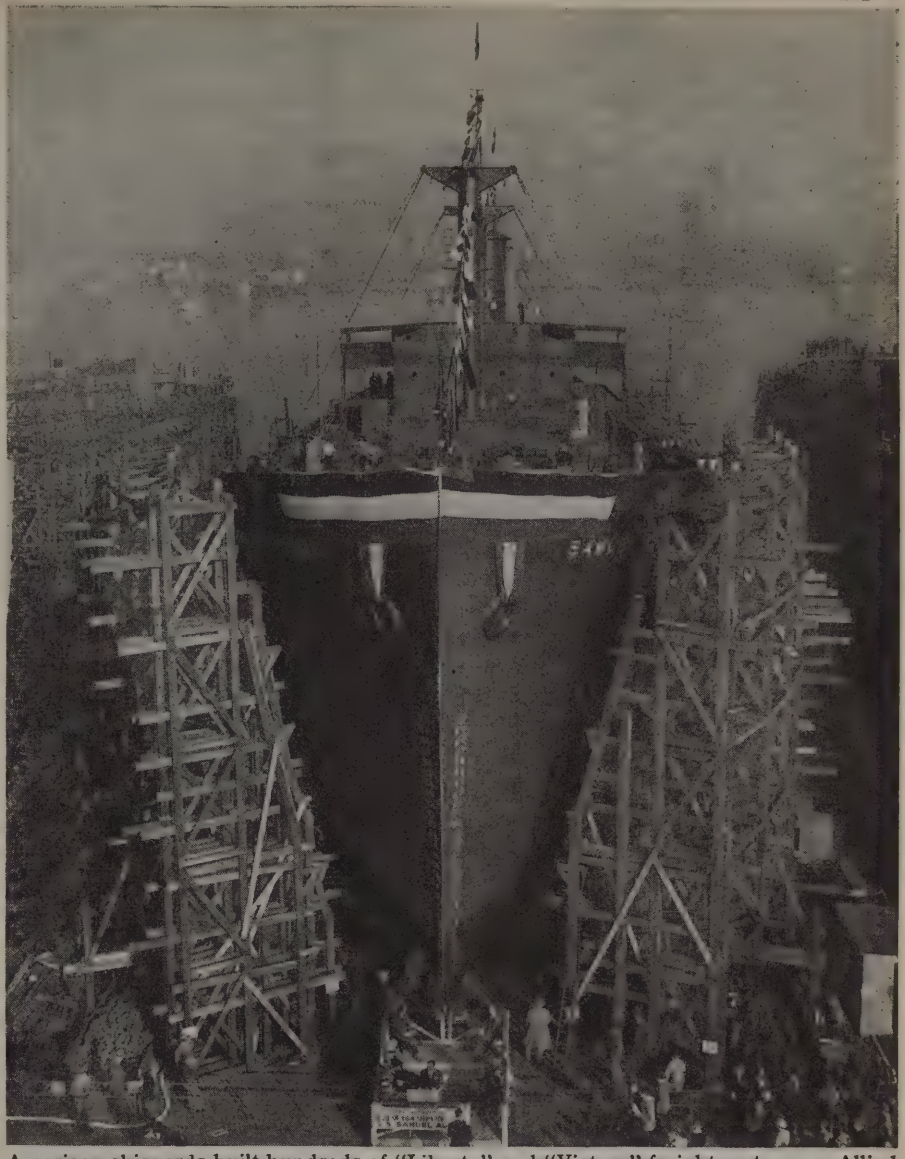
satisfied, to war industry, civilian industry, and agriculture. The WMC estimated that at the height of the nation's war effort about 65 million people were needed to carry on all the essential activities—fighting, growing food, making war goods, and serving civilian needs—compared with a peacetime aggregate of some 48 million workers. The increase of 17 million was made up of young people just out of school—or employed part time after school—a large number of women with their first jobs outside the home (*see* Women's Service), and many handicapped people once considered unemployable.

Raw Material Shortages

As the manufacture of war goods went ahead rapidly, shortages in many raw materials began to be felt. The rubber problem was the most acute. The Japanese conquests in the Southwest Pacific had cut off rubber shipments to the United States, and the nation turned to the manufacture of synthetic rubber to replace its fast-dwindling stock of crude rubber (*see* Critical Materials).

Because war industries used tremendous quantities of steel, the civilian use of steel was reduced to a minimum. Other metals also were so much in demand for war equipment that the production of a great many items for the civilian market—such as refrigerators, bicycles, radios, vacuum cleaners, and electrical appliances—was discontinued for the duration of the war.

A UNIT OF THE U. S. WARTIME MERCHANT FLEET



American shipyards built hundreds of "Liberty" and "Victory" freighters to carry Allied war cargoes. This ship was built in the yards of the California Shipbuilding Corporation.

Along with efforts to conserve critical materials by reducing or eliminating the manufacture of certain kinds of consumer goods went campaigns to collect and use scrap metals and materials normally wasted in peacetime. All citizens—especially school children—were called upon to collect waste paper, old rubber, discarded brass, copper, and iron utensils of all kinds. Housewives were urged to save and turn in to collecting agencies their used kitchen fats, which yielded ingredients essential to the production of munitions. And because tin was required in such large quantities by the armed services, particularly in the packaging of food and field rations, the government asked housewives to turn in all empty tin cans for salvage. (*See also* Critical Materials.)

Scarcity of Adequate Housing

As war industries sprang up throughout the country—and thousands of workers moved to new centers of war work or to industrial localities already overcrowded—the problem of where to house the workers and their families became increasingly acute. Many new plants, especially those that produced munitions, were built in rural areas. Workers had to travel many miles every day from their homes in the nearest town or had to try to find housing near by, usually in hastily erected trailer camps.

The government undertook to solve this problem,

WOMEN HELP TO "KEEP 'EM FLYING"

These women are leaving a west coast aircraft plant where they helped to build the mighty bombers which dropped destruction on Germany and Japan. Women were particularly skilled at installing the delicate instruments and wiring systems of airplanes.

which threatened to become a costly handicap to the war effort, by launching a nation-wide federal housing program designed to furnish homes for the nation's war workers. Under this plan entire communities of small houses—ranging from cottages to barracks-like buildings—stores, water and sanitation systems, schools, recreation halls and theaters, and other facilities were established adjacent to or near war plant sites. All this construction work—together with the vast program of the armed forces for building training camps and bases —required such a large supply of lumber and other building materials that the construction of private homes and factories was abandoned.

Program of Civilian Defense and Rationing

In many ways the daily lives of civilians were affected by the war. Even before the United States declared war, the Office of Civilian Defense had been created (May 1941) to devise certain measures for civilian security in the event of attack. Each community's organization was set up and directed by a local defense council which appointed *fire wardens, auxiliary policemen and firemen, rescue squads*, and other units deemed necessary to adequate protection. Many cities and towns held practise *blackouts* or simulated raids in which the efficiency of their defense organizations was tested.

More than in any other way, perhaps, civilians felt the full impact of the war when they were subjected to the restrictions of the nation's rationing program. Four days after Pearl Harbor the government—in an effort to conserve rubber for war needs—"froze" automobile tires by prohibiting their sale to all but car owners "essential" to the war effort. Soon it became apparent

THE PENTAGON BUILDING—GIANT OF WARTIME CONSTRUCTION

This five-sided building is across the Potomac from Washington, D. C. One of the largest units in the wartime federal building program, it houses the administrative offices of the U. S. War Department. Note the large parking lot at the right.

that the use of tires already on automobiles would have to be cut down in order to keep the low stockpile of tires from being depleted. Nation-wide gasoline rationing, therefore, was introduced in December 1942. The consequent reduction in pleasure driving also lessened the drain on the country's gasoline supply, most of which was needed for military purposes.

Early in 1942—when the lack of shipping space for imported foodstuffs began to be felt—food rationing was put into effect. Every one of the nation's 130 million people was registered and given books of colored ration coupons. Small red and blue tokens were also used. Sugar was the first food to be rationed, followed shortly by coffee. Then in 1943 canned foods and cheese and butter were rationed.

There were shortages also in civilian clothing. Because most of the country's sole leather was allocated to military and lend-lease purposes, sales of shoes were limited. And as wool and cotton were converted to war uses, civilian clothing made of those materials became scarce and hard to buy.

TEMPORARY LIVING QUARTERS FOR WAR WORKERS

Providing housing for the thousands of war workers presented one of the most difficult home-front problems. Here we see two solutions. At the top are government-built apartment houses at Oak Ridge, Tenn., site of a huge atomic bomb plant. At the bottom are several units of a "trailer town" for workers at the Bremerton, Wash., Navy Yard.

How the Nation's War Bill Was Paid

In still another way civilians were reminded that they were "at war" almost as much as the nation's fighting men—for civilians were called upon to pay the tremendous cost of equipping and maintaining the armed services.

The war bill was paid in two ways: by taxes and by loans to the government through the purchase of war bonds. To increase the amount of money contributed by the tax method, individual and corporation tax rates were increased greatly, and personal exemptions for individual taxpayers were reduced. In addition, a five-per cent Victory Tax was imposed on all individual incomes in excess of $12 a week.

Up to the time of Japan's surrender in 1945, seven war-bond selling drives were conducted in the United States to supply the rest of the money needed for armament production in addition to the sums raised by taxation. In order that the government might increase its borrowing from its citizens, the national debt limit was raised periodically—first to 125 billion in 1942 and finally to 300 billion in 1945. (*See also* Financing War.)

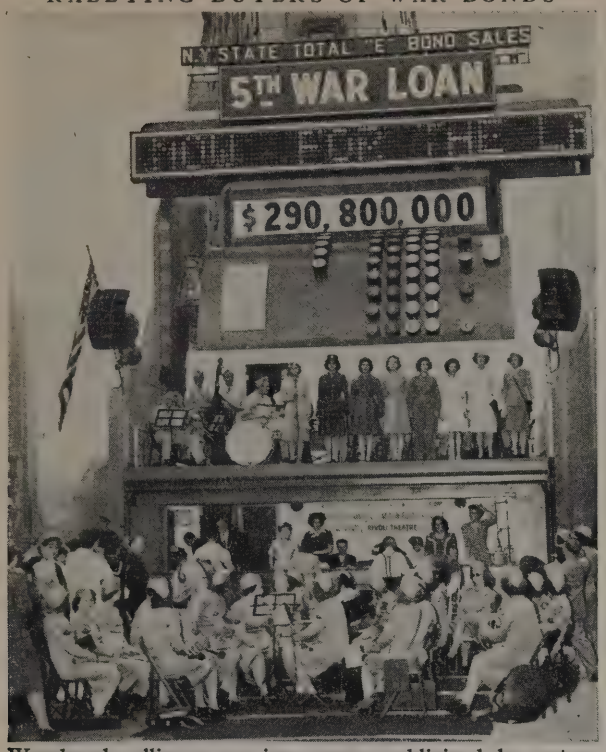
Education's Part in the War Effort

American schools and colleges contributed substantially to the nation's war effort. When the drafting of men for military service began in 1940, the tremendous task of registering the country's millions of men was done in the school buildings of most communities, and thousands of teachers volunteered as registration clerks. Later, when the gasoline and food rationing programs were introduced, the nation's school buildings again were the site of the registration of citizens by teacher

VARIED ASPECTS OF THE HOME FRONT'S "WAR"

Thousands of activities, related only in their common goal—victory over the foe—comprised the home front's war effort. 1. North Dakota women work their husbands' farms while the menfolk are away fighting. 2. School boys collect waste paper to be made into ammunition containers. 3. An office worker and a student learn to operate a war plant lathe after their regular day's work is done. 4. A typical railroad yard jammed with cars of war materials headed for the front.

RALLYING BUYERS OF WAR BONDS



War-bond selling campaigns were publicized by entertainers. Before a giant cash register in Times Square, army and WAC musicians remind New Yorkers of a drive's goal.

volunteers and of the distribution of some 415 million ration books. Many teachers served on the boards which administered the rationing program for the war's duration.

A year after the United States went to war, the War and Navy Departments inaugurated a specialized training program for men and women serving in those branches of the armed forces. Some 400 of the nation's colleges and universities provided the facilities and instructors for training the Army and Navy specialists. In addition to this specialized training for military service, many colleges and several thousand high schools and trade schools offered instruction designed to increase the efficiency and productivity of people engaged in war industry and in farming. Altogether the nation's educators gave this training to nearly 12 million workers.

Hull, Cordell. From 1933 to 1944 Cordell Hull was secretary of state. He held that office longer than any other man in United States history. Hull approached diplomatic problems by the economic route. Believing that a free world economy was the true road to world peace, he developed the reciprocal trade treaty program of the United States. He was also a leader in President Roosevelt's "good neighbor" policy for North and South America. Resigned in 1944, because of ill health; awarded the Nobel Peace Prize, 1945.

Born 1871, in log cabin, Overton County, Tenn.; educated, Cumberland University Law School; admitted to the bar, 1891; judge in Tennessee, 1903–7; House of Representatives, 1907–21 and 1923–31; Senate, 1931; resigned upon his appointment to cabinet. Author, federal income tax legislation of 1913; chairman, United States Delegation to Inter-American Conference for Maintenance of Peace, 1936.

HUNGARY'S BORDERS SHIFT IN THE TIDES OF WAR

We see here how Hungary shrank after the first World War, regained some territory, and lost it again after the second World War through cessions to the victors.

Hungary. A "have not" nation, Hungary joined the Axis in 1940. But it wanted gains without battles. In April 1941 Germany virtually occupied it to force it into the war. On June 27 Hungary reluctantly declared war on Russia, and on December 12 on the United States. Hungarian forces lost heavily. In August 1944 Russian armies drove into Hungary, granting it an armistice Jan. 20, 1945. Conservatives won the national election November 5, but Russia dominated the new republic created Feb. 1, 1946.

ICELAND SERVES AS STRATEGIC OUTPOST

Mountainous Iceland was the chief weather base in the North Atlantic. A naval base and an airport for transatlantic planes, shown by a plane symbol, were built near Reykjavik in the southwest. Akureyri in the north was a key defense post.

Iceland. This subarctic island, in autonomous union with Denmark, had no army. On May 10, 1940, some 60,000 British troops occupied it to prevent possible seizure by Germany. On July 1, 1941, Iceland invited the United States to replace the withdrawing British

SCENES FROM AMERICAN ARMY LIFE IN ICELAND

1. American soldiers in Iceland lived in these tunnel-shaped Nissen huts, built of corrugated sheet iron. The huts have no open seams for wind to enter and no eaves to rattle. 2. In this typical interior of a hut, soldiers enjoy the warmth of a pot-bellied stove. Air space beneath the floor boards insulates the hut from the cold of the winter-frozen ground. 3. Two attractive Icelandic girls smile for soldiers between dances.

force. The United States stationed 45,000 troops there, built coastal weather stations, a naval base at Hvalfiord, and a transatlantic air base near Reykjavik. In 1944 Iceland declared itself an independent republic. In April 1946 it reaffirmed its refusal to grant permanent bases to the United States.

ICKES, HAROLD L. Ickes became secretary of the interior in President F. D. Roosevelt's first cabinet in 1933. In 1942 he set up the Petroleum Administration Board to control the country's fuel and oil. He strongly advocated federal and municipal power projects and federal housing. Vigorous, quarrelsome, and untiring, he was President Roosevelt's loyal champion. Opposing a nomination by President Truman, Ickes resigned from the cabinet in February 1946.

Born 1874, Blair County, Pa.; educated at University of Chicago; law degree. Began career of crusading politician while in college. Member "Bull Moose" party; active in Chicago politics; originally a Republican, he backed his convictions rather than a party; helped in Roosevelt's election, 1932. Author of 'Fighting Oil' and 'The Autobiography of a Curmudgeon'.

INDIA. The viceroy did not consult Indian leaders before he declared India at war with Germany in September 1939. India's resentment persisted through the war, yet the nation aided the Allies considerably. Its army of nearly 2,000,000 volunteers served notably in North Africa, Europe, and Burma. The Indians built new industries to help supply the CBI (China-Burma-India theater). Indian airfields based the 10th Air Force bombers and

"hump" cargo planes. After the war political unrest mounted. Some 92 million Moslems, led by Jinnah, demanded *Pakistan*, a separate Moslem state. Gandhi and Nehru, National Congress leaders, wanted a united India. In 1946 the British pledged dominion status or full independence when the rival factions settled their differences.

INDIAN WOMEN HELP TO BUILD A B-29 FIELD

To enlarge an American air base in India, women laborers carted away tons of earth in their head baskets. Air Transport Command planes flew from fields like this.

INFANTRY. Firearms, airplanes, and other devices have been hailed as deadly enough to win wars without other aid. But in the second World War, as in all others, victory did not come until the patient, stubborn foot soldier had dealt man to man with every enemy. The infantry was still, as formerly, the "Queen of Battles." The United States recognized this by giving a Combat Infantryman Badge to every infantryman who served in major engagements of the war.

The war also brought an advance in the skill, equipment, and resourcefulness needed by the infantry. Instead of being a mere rifleman, almost every infantryman was a skilled specialist of some sort.

INVASION TACTICS. When the Allies invaded enemy territory, they made the opening breach in the defense by smothering the position with firepower from bombers, naval or land guns, and rocket ships or rocket batteries. After the first break came the harder task of holding against counterattack.

Powerful air cover was provided, and enemy ground movement was blocked as far as possible with gunfire and air bombardment and strafing. Meanwhile every effort was made to build up reinforcements and supplies, using revolutionary types of equipment.

Shallow draft landing craft were devised to run aground within wading distance of a beach. Then from

THE "DOUGHFOOT" AND HIS VARIETY OF WEAPONS

Through the mud, two foot soldiers slog along (upper left). No wonder infantrymen called themselves "doughfeet"! In the lower picture, four soldiers display the many weapons the infantry used in the second World War.

HOW LANDINGS WERE "MADE TO STICK"

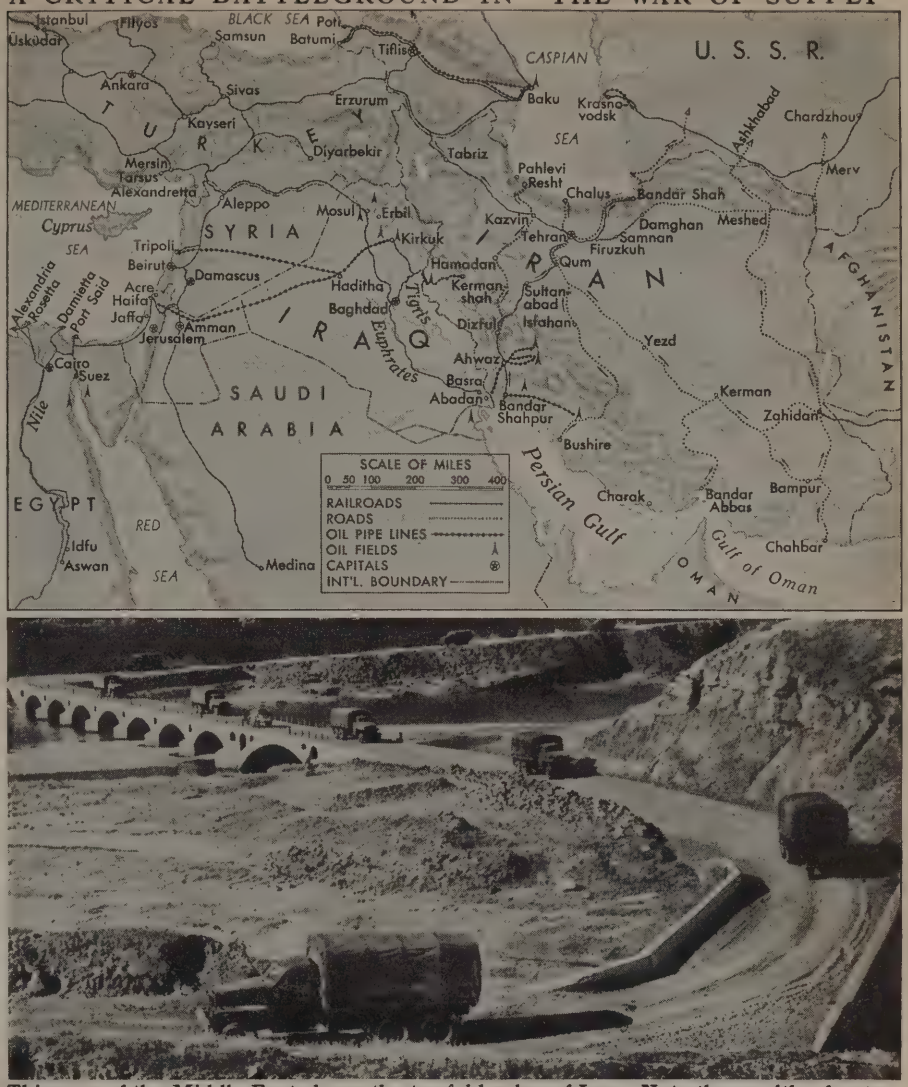
Here are glimpses of ingenious equipment and methods which the Allies used to land on enemy coasts and maintain their forces after landing. 1. American planes clear the way for the attack on Iwo Jima. 2. An officer uses radio and a loud speaker to direct landing of supplies on Attu Island. 3. Steel mats provide a landing field on Leyte in the Philippines. 4. A huge floating reel lays a flexible gasoline pipe line across the English Channel. 5 and 6. Scuttled ships and seven steel barges provide a breakwater and a wharf for a Normandy beachhead.

the bow a ramp could be lowered to discharge men or vehicles (*see* Amphibious Warfare). At times, wharves were provided by linking special steel barges end to end and running one end of the line ashore. Bulldozers and steel mats provided landing fields almost overnight for airplane delivery of men and supplies.

The invasion at Anzio, Italy, early in 1944, was an example on a medium scale of this type of operation. To serve the force of about 92,000 men required from 2,700 to 7,800 tons of supplies a day, divided as follows: about three-fifths ammunition, one-fifth food, and one-fifth gasoline, oil, and other supplies. The supplies were brought in loaded trucks, which proceeded to storage and supply dumps. A "sea train" of several hundred ships accompanied the initial invasion, and fully as many thereafter ran a "shuttle service" from base ports.

Of course, the most trying, dangerous, and heroic work in any of the invasions was done by the fighting troops. But their utmost efforts would have been futile without the tremendous and intricate supply system which supported them.

A CRITICAL BATTLEGROUND IN "THE WAR OF SUPPLY"



This map of the Middle East shows the twofold value of Iran. Note the wealth of petroleum, and also how Iran serves as a land bridge to Russia from the Persian Gulf to the Caspian Sea. The rugged highway (lower picture) is one of the roads built by the Persian Gulf Command to truck lend-lease goods to Russia.

IRAN-IRAQ. These two Arab kingdoms were drawn into the war because of their petroleum and their strategic position. Implementing a treaty made with Iraq in 1930, the British occupied Iraq in April 1941 to prevent Germany from seizing it. Then infiltration of Nazis into Iran led Britain and Russia to invade it in August. The American "Persian Gulf Command" entered Iran in 1942. It withdrew in January 1946, and British forces left in March; but continued presence of Russian forces became an international problem (*see* Peace).

ITALY. In each of the two World Wars, Italy met the outbreak of conflict by declaring neutrality. But in June 1940 Germany seemed about to win the war. Hoping to share in the gains of victory, Mussolini declared war on France on June 10. He won little. In the armistice terms which Germany imposed on France, Italy was allowed only to occupy Nice and to use French transportation facilities in East Africa.

Italy then attempted to oust the British from Egypt and the Suez Canal. In August the Italians overran British Somaliland, and in September an army of 260,000 under Marshal Rodolfo Graziani drove eastward from Libya into Egypt. On October 28 Italy invaded Greece.

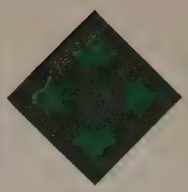
Each campaign soon failed. On November 11 a British air attack on Taranto disabled half the Italian battle fleet. This weakened the Mediterranean supply line, and the drive into Egypt was stalled at Sidi Barani. On December 9 the British struck back with the Army of the Nile under Gen. Archibald Wavell. By February 5 this small force of 30,000 had driven the Italians back to El Agheila. Meanwhile the inept attack on Greece had been stopped by mountains, snow, and Greek resistance (*see* Greece; War in Europe). By May the British had regained Ethiopia and Somaliland. These disasters reduced Italy to a Nazi puppet. To keep it in

U. S. ARMY UNITS—THEIR SHOULDER

1st "The First"
Tunisia, Sicily, Normandy, the Bulge, Germany

2nd "Indian Head"
Normandy, the Ardennes, Leipzig

3rd "Marne"
Sicily, Cassino, Anzio, Colmar pocket, Salzburg



4th "Ivy"
Cherbourg, Bastogne

5th "Red Diamond"
Metz, Luxemburg, Mainz-Worms bridgehead

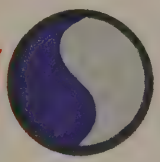
6th "Sight-seeing"
Sansapor in New Guinea, northern Luzon

7th "Hour Glass"
Attu, Kwajalein, Leyte, Okinawa

8th "Golden Arrow"
Brittany, Düren, Cologne plain

9th
El G
Cote
Germ

28th "Keystone"
Paris, Hürtgen Forest, Colmar pocket



29th "Blue and Gray"
D-day in Normandy, St. Lô, Siegfried Line, Aachen

30th "Old Hickory"
St. Lô, Aachen, Siegfried Line, Rhine crossing

31st "Dixie"
Morotai, Davao in southern Mindanao

32nd "Red Arrow"
Buna, Aitape in New Guinea, Leyte

33rd "Prairie"
Baguio in northern Luzon

34th "Red Bull"
Tunisia, Cassino, Livorno, Bologna

35th "Santa Fe"
St. Lô, Metz, Nancy, Ardennes, Ruhr

36th "Texas
Salerno, Cassi
France, Germa

63rd "Blood and Fire"
Colmar pocket, Bavaria, Danube River

65th "Battle-Axe"
Saarlautern, Regensburg, Danube River

66th "Black Panther"
Lorient, St. Nazaire, Army of Occupation

69th "Fighting Sixty-Ninth"
Siegfried Line, First to link up with Russians in Germany

70th "Trail Blazers"
Saarbrücken, German Occupation

71st
Siegfried Line, Hardt Mountains, Danube River

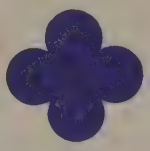
75th
Battle of the Ardennes Bulge, Westphalia

76th "Liberty Bell"
Luxemburg, German Occupation

77th
Guam,

86th "Black Hawk"
Dachau, southern Germany, Danube River

87th "Golden Acorn"
Ardennes, Coblenz, Black Forest

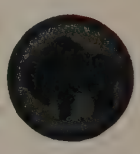


88th "Cloverleaf"
Rome, Gothic Line northern Italy

89th "Rolling W"
Bingen, Eisenach, Czech Border

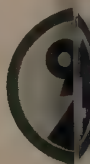
90th "Tough 'ombres"
Normandy, Metz, Czechoslovakia

91st "Wild West"
Arno River, Pisa, Bologna



92nd "Buffalo"
Arno River, Po Valley, Genoa

93rd
Bougainville, Morotai, Philippines



9
Brittany,
Moselle

103rd "Cactus"
Wissembourg, Stuttgart, Austria

104th "Timber Wolf"
Rhine crossing, Cologne, Ruhr

106th "Golden Lion"
St. Vith, Battle of the Bulge

Americal
Guadalcanal, Bougainville, Cebu Island in Philippines

1st Cavalry "Hell for Leather"
Negros, Leyte, Manila

Army Air Forces
Headquarters insignia is basic design for other AAF patches

Mediterranean Allied Air Force
Composed of U. S. and British air commands, fought over southern Europe

heav

Eighth Air Force
Headquarters in England, carried out heavy bomber raids over Europe

Ninth Air Force
Headquarters in England, carried out tactical raids over Europe

Tenth Air Force
Headquarters in India, covers India-Burma area

Eleventh Air Force
Headquarters in Aleutians, covers Northern Pacific

Twelfth Air Force
Headquarters in Italy, carried out tactical Mediterranean raids

Thirteenth Air Force
Headquarters in Southwest Pacific, covers this area

Fourteenth Air Force
Headquarters in Chungking, covers China

Fifteenth A
Headquarter
carried out
Mediterrane

ISIGNIA AND WHERE THEY FOUGHT

10th Mountain
Arno River, Po Valley

11th Airborne
Leyte, Manila, Cavite

13th Airborne
Units in Italy, southern France

17th Airborne
Parachuted across Rhine

24th "Victory"
New Guinea, Leyte, Corregidor, Verde Island, Mindanao

25th "Tropic Lightning"
Guadalcanal, New Georgia, Philippines

26th "Yankee"
Battle of the Bulge, Siegfried Line

27th "New York"
Makin Island, Saipan, Okinawa

…th "Buckeye"
…da, Bougainville, …yen Gulf, Manila

38th "Cyclone"
The recapture of Bataan

40th "Sunburst"
Negros, Luzon, Panay Island in Philippines

41st "Jungleers"
Salamaua, Marshalls, Mindanao, Palawan

42nd "Rainbow"
Schweinfurt, Munich, Dachau

43rd "Winged Victory"
New Georgia, New Guinea, Luzon

44th
The Saar, Ulm, Danube River

45th "Thunderbird"
Sicily, Salerno, Cassino, Anzio, Belfort Gap

…f Liberty"
…Okinawa

78th "Lightning"
Aachen, Remagen, Roer River

79th "Lorraine"
Cherbourg, Normandy breakthrough, Vosges Mountains

80th "Blue Ridge"
Normandy, Moselle River, relief of Bastogne

81st "Wildcat"
Angaur, Peleliu and Ulithi

82nd Airborne "All American"
Sicily, Normandy, Nijmegen, Ardennes

83rd "Thunderbolt"
St. Malo, Roer, Ardennes

84th "Railsplitters"
Siegfried Line, Ardennes, Hanover

85th "Custer"
Rome, Po Valley

…Line, …aar

95th "Victory"
Metz, Moselle River, Siegfried Line, Saar

96th "Deadeye"
Leyte, Okinawa

97th "Trident"
Ruhr pocket

98th "Iroquois"
Hawaii

99th "Checkerboard"
Ardennes, Remagen bridgehead

100th "Century"
Bitche, Saar

101st Airborne "Screaming Eagle"
Normandy invasion, Bastogne

102nd "Ozark"
Siegfried Line, Rhine-Elbe, Munich-Gladbach

…S. Strategic …Air Force
…up of U. S. 8th, … Forces, directed …er raids over Europe

First Air Force
Headquarters at Mitchel Field, N. Y., protects Atlantic Seaboard

Second Air Force
Headquarters at Colorado Springs, protects western U. S.

Third Air Force
Headquarters at Tampa, Fla., protects southeastern U. S.

Fourth Air Force
Headquarters at San Francisco, protects U. S. Far West

Fifth Air Force
Headquarters in the Philippines, patrols Southwest Pacific

Sixth Air Force
Headquarters in Canal Zone, protects Caribbean area

Seventh Air Force
Headquarters in Marianas, covers Central Pacific

ARMORED AND SPECIAL UNITS

…ce
…ity, …ic …ds

Twentieth Air Force
Headquarters in Washington, D. C., superbomber force against Japan

6th "Super Sixth"
Brest, Normandy breakthrough, Bastogne, the Saar

Tank Destroyer Units
Attached to all Ground Force divisions

Persian Gulf Service Command
Moved Lend-Lease supplies to Russia

Rangers
Specially-trained battalions which fought in Italy and France

Army Personnel, Amphibious
Assigned to Amphibian Units

the war, Germany occupied it. On July 9, 1943, the Allies invaded Sicily. On September 3 they landed in Italy. The Italians surrendered September 8, and declared war on Germany October 13. Meanwhile Mussolini had resigned July 25. He was imprisoned until September 12, when he was freed by German paratroops. Fleeing to northern Italy, he set up a Republican Fascist State. He headed this until he was captured by Italian partisans and assassinated April 28, 1945.

The war left Italy virtually ruined and stripped of its empire. Central and northern Italy had suffered heavy damage. Italy also faced the demands of Greece and Albania for large reparations. Yugoslavia demanded Trieste; Austria, the Tyrol. Its foreign trade shattered, Italy lacked raw materials. Political strife further weakened it. Communists, Christian Democrats, Socialists, resurgent Fascists, and smaller parties quarreled among themselves, toppling cabinet after cabinet. King Victor Emmanuel abdicated May 9, 1946, in favor of Crown Prince Humbert. But on June 2 Italy voted to become a republic.

WHEN MUSSOLINI WAS "THE STRONG MAN"

Thrusting out his clenched fist, Mussolini promised his Blackshirts that Fascism would lift Italy to world power.

JAPAN. When war began in Europe, Japan—engaged in its struggle with China—declared neutrality. But when England and France suffered defeats in 1940, Japan pushed its plan to expel the Western powers from Asia and to set up a "Japanese Co-prosperity Sphere." In September 1940, Japan forced France to cede military bases in Indo-China. Japan then signed a treaty with Germany and Italy, pledging mutual aid if any of the three nations should be attacked by a new enemy.

Through most of 1941, Japan alternated between threatening aggression and promising peace. In November 1941, Premier Tojo sent envoys to the United States to get American approval of Japan's "new order in Asia." On November 26, the United States offered economic coöperation with Japan if the Japanese would evacuate China and withdraw from the Axis. On the afternoon of December 7 (Washington time) the envoys refused the American offer. At that same moment Japan was attacking Pearl Harbor.

In less than six months Japan took the Philippines, the Netherlands Indies, Thailand, Malaya, and Burma. These conquests, with the conquered areas in China, added 4 million square miles and 400 million people to Japan's empire. The southern reaches of this vast empire lay nearly one-third the way around the world from the United States. Heavily fortified mandated islands in the Carolines, Marshalls, and Marianas, and outposts

AMERICAN TROOPS STUBBORNLY PRESS ITALIAN CAMPAIGN TO ROME

This raft-load of 5th Army soldiers pulls hand over hand to the Nazi-held bank of the Volturno River, near Naples. The slow Italian campaign was one of the bitterest in the war. 5th Army mechanized units enter Rome, June 4, 1944.

WAR STRIKES INTO THE PACIFIC FROM THE LAND OF THE RISING SUN

These are captured Japanese photographs. Aircraft carrier pilots study a tactical diagram before bombing Pearl Harbor, Dec. 7, 1941 (left). Lieut. Gen. J. M. Wainwright broadcasts an order to his American-Filipino forces to surrender after Corregidor fell, May 6, 1942. Note the Japanese guard (right).

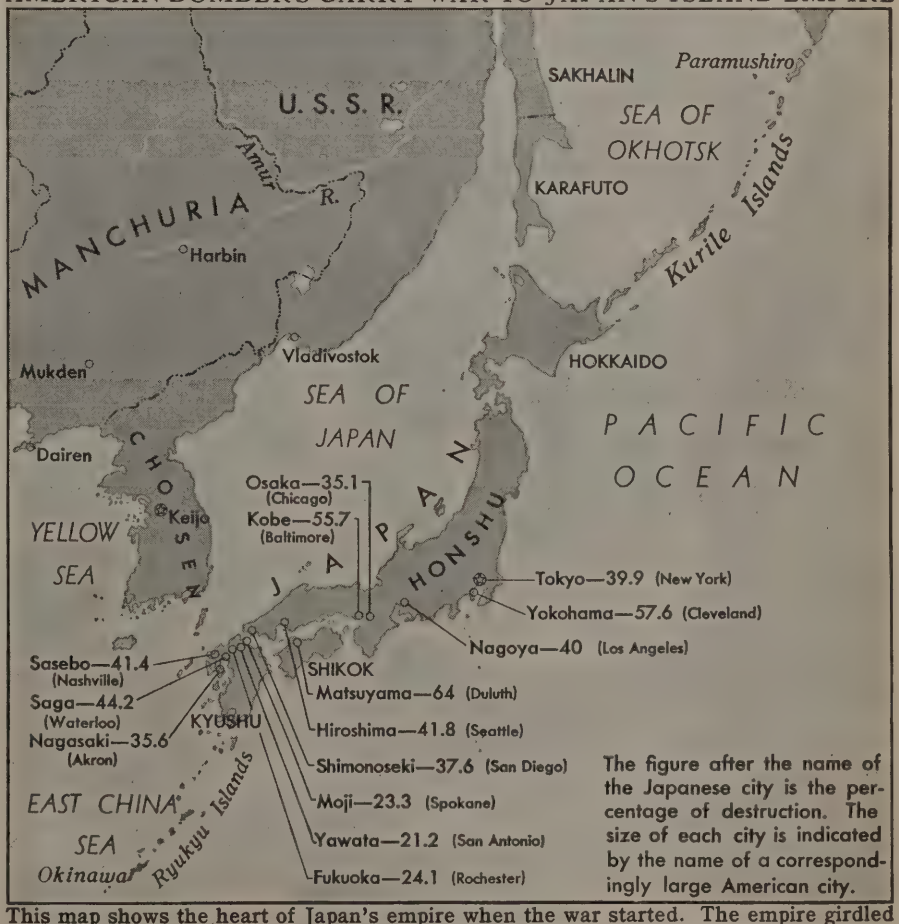
seemed to bulwark the empire against successful invasion. Confidence in this, together with Shinto emperor worship and belief in the divine mission to rule all other peoples, led the Japanese to treat civilian internees and prisoners of war with vicious cruelty.

In the summer of 1942 however, the United States began striking back, and early in 1943 the American campaign began gaining speed and power. Japan's island bastions fell one by one, despite savage resistance which chose death to surrender. (For military events of the campaign, see Pacific Ocean.)

In 1944 Japan's home islands, untouched since the Doolittle raid in 1942, felt the full impact of war for the first time in history. On June 15, 1944, Superforts from the Marianas began an aerial siege of 14 months. In 32,612 sorties they dropped 169,421 tons of bombs, damaged 59 cities, 2,500,000 buildings, and killed 450,000 persons. On Aug. 6, 1945, the atomic bomb blasted Hiroshima. Japan surrendered August 14.

The American occupation of Japan, headed by Gen. Douglas MacArthur, began August 27. The Americans undertook to democratize Japan. They broke up the Zaibatsu, or family trusts, which controlled some two-thirds of Japanese industry. They ordered land to be distributed to the

AMERICAN BOMBERS CARRY WAR TO JAPAN'S ISLAND EMPIRE



This map shows the heart of Japan's empire when the war started. The empire girdled Asia's east coast and reached into Manchuria. Notice how American air raids centered on the chain of industrial cities on the "home islands" of Honshu and Kyushu.

AMERICAN FIRE RAIDS BURN OUT TOKYO'S "TINDER BOXES"

Here, in Tokyo's business heart, only concrete structures, built to withstand earthquakes and fire, survived bombings. The neighboring wooden buildings were razed.

peasants. They gave women the vote, and banned Shinto as a state religion. But Japan faced grave postwar problems. Surrender terms gave Manchuria and Formosa to China, and made Korea independent. These lands had supplied much of the raw material Japan needed for its industries, which formerly had supported more than a third of the population. Japan's merchant fleet, once third largest in the world (5,255,627 tons in 1939), had been cut to less than 1,500,000 tons. The enforced demobilization of its army of 7 million and the repatriation of Japanese workers from Manchuria, Formosa, and Korea, threatened to raise the number of unemployed to 10 million.

JET PROPULSION. For many centuries men have known that a blast of flame directed backward would drive an object forward. But the principle was neglected until the second World War brought *jet propulsion.*

The first advance was the development of rockets into missiles which carried heavy explosive charges (*see* Rockets; V-Bombs). Rocket "assists" or "boosters" also were used under the wings of heavily laden airplanes to get them in the air with a short take-off run. A great advance was jet-driven fighter planes, such as the American P-80 (the Shooting Star). These planes could travel at speeds approaching that of sound (about 740 miles an hour). The fuels varied from slow-burning explosive mixtures in rockets to ordinary kerosene in planes.

JUNGLE WARFARE. In the second World War, American, Australian, and British soldiers were compelled to learn how to fight in the jungles of the southwest Pacific islands and of Burma. Because large units could not maneuver in the dense forests, the troops were trained to operate in small, more or less independent groups. They wore special clothing that blended with the undergrowth and carried weapons specially suited for hand-to-hand fighting. To offset the long experience of the Japanese in jungle warfare, the Allied soldiers used friendly forest people as guides.

KING, ADMIRAL ERNEST J. Admiral King had greater authority than any other officer in the history of the U.S. Navy. He was both commander in chief of the U.S. Fleet and chief of naval operations. He shifted emphasis from the battleship to the aircraft carrier and coöperated closely with army aircraft. He urged the United States to keep Pacific bases it won in the war.

Born 1878, Lorain, Ohio. Graduated Annapolis, 1901. Became submarine captain, 1922. Won navy wings at 49. Became chief, Bureau of Aeronautics, 1933; commander

MARINES ADVANCE AGAINST JUNGLE AND SNIPERS' BULLETS

Soldiers clad in jungle uniforms move slowly behind tanks in this South Pacific forest.

in chief of Atlantic Fleet, 1940; of U.S. Fleet, 1941; chief of naval operations, 1942; 5-star admiral, 1944.

KING, WILLIAM LYON MACKENZIE. Prime Minister Mackenzie King, Liberal, guided Canada throughout the war with particular attention to coördination with Britain and the United States. Indeed, in 1940, he led in organizing the Permanent Joint Defense Board for Canada and the United States. Despite isolationist Quebec, he put conscription into force in 1940 for service in Canada, and in 1944 for service overseas. In 1945, King began his sixth term as prime minister.

Born 1874, Kitchener, Ont. Harvard fellow in political science, 1897–1900 (Ph.D., 1909). Served as prime minister, 1921–30 (except June–Sept. 1926); resumed this office, 1935 (chosen again 1940 and 1945).

KOREA. "The Land of Morning Calm," as Koreans call their ancient land, was a pawn in the war. The Japanese impressed thousands of Koreans into labor battalions, forcing them to build fortifications on Pacific islands. A number, however, fled their homeland to serve in the Chinese and Russian armies. In August 1945, Russian marines invaded northern Korea at Rashin. American occupation forces, under Lieut. Gen. John R. Hodge, landed at Inchen in central Korea, September 8. Dividing the zones of occupation at the 38th parallel, the Americans occupied agricultural southern Korea; the Russians held the industrial north.

KRUEGER, LIEUTENANT GENERAL WALTER. To command the Sixth U.S. Army in Australia, General MacArthur in 1943 chose "a soldier's soldier," Lieut. Gen. Walter Krueger. Krueger had shown outstanding capacity in maneuvers before the war, and amply fulfilled this promise with his leadership of the Sixth Army across New Guinea, the Admiralties, New Britain, Leyte, Luzon, and into Manila in February 1945.

Born 1881, Flatow, Germany. Brought to U.S. at age of 8. Enlisted 1898, for Spanish-American War. Served in Cuba, 1898; Philippines, 1899–1903; on Mexican border, 1916; overseas in first World War. Temporary lieutenant general, 1941; general, 1945.

LATIN AMERICA. The war led the 20 Latin American republics and the United States to develop "hemisphere solidarity." On Sept. 23, 1939, they adopted the Act of Panama, creating a "zone of security" for their Atlantic waters. When the fall of France and the Netherlands threatened the status of French and Dutch colonies in South America, the Pan American nations signed the Act of Havana, July 31, 1940. This banned the transfer of colonies in America to another European power.

When the United States went to war, most Latin American nations also declared war on the Axis or broke relations with it. Some provided air bases. Aided by lend-lease, nearly all increased production of war supplies. Brazil sent troops to Italy in 1944, and Mexico sent a small air force to the Pacific in 1945. On March 3, 1945, the Pan American nations signed the Act of Chapultepec. This pledged mutual aid against any aggressor. Argentina remained "neutral" until 1944, and was accused of harboring Nazi agents. On March 27, 1945, it reluctantly declared war in return for being admitted to the United Nations Organization.

LEAHY, ADMIRAL WILLIAM D. Bushy-browed Admiral Leahy brought 50 years of naval and diplomatic experience to the job he undertook in 1942 as the President's adviser on strategy (chief of staff to the commander in chief of the army and navy). He served also as unofficial head of the United Nations' combined chiefs of staff. All this activity came after he had supposedly retired at the age of 64. As early as 1937, he had foreseen Japan's aggressions and had urged the United States to declare war at that time.

A "GOOD NEIGHBOR" JOINS THE ALLIES

Brazilian troops ride on parade. Brazil entered the war in 1942, and in 1944 it sent an army to Italy. This was the only South American force which fought overseas.

Born 1875, Hampton, Iowa. Graduated Annapolis, 1897. Commanded troopship, first World War. Became chief of naval operations, 1937; governor of Puerto Rico, 1939; ambassador to France, 1940; 5-star admiral, 1944.

LEAR, LIEUTENANT GENERAL BEN. Lieutenant General Lear did many jobs and did them well. As commander of the Second Army, in Tennessee, 1940–43, he toughened men for combat. From 1943 to 1944, he served with the secretary of war's personnel board, and as commander of army ground forces, 1944–45, supervised all ground-forces training in the United States. In January 1945, he became Eisenhower's deputy commander of the European theater, in charge of replacing casualties. A strict man, in 1941 he made soldiers hike 15 miles under full pack for shouting at shorts-clad girl golfers.

Born 1879, Hamilton, Ont. Enlisted, 1898, Spanish-American War. Became cavalry officer, 1901. Served on general staff, first World War. Advanced through ranks to lieutenant general, 1940. Retired, October 1945.

LEND-LEASE. On March 11, 1941, Congress passed the Lend-Lease Act. This bill authorized the president to furnish goods and services to countries whose defense he considered vital to the security of the United States. The bill provided for lending or leasing goods, rather than selling, with return "in kind" after the war.

Immediately lend-lease goods began to flow to nations allied against the Axis. To handle the ever-mounting flow, a separate government agency was set up Oct. 28, 1941. This agency was the Office of Lend-Lease Administration; it was directed by Edward R. Stettinius, Jr.

U.S. LEND-LEASE AID March 1941 to Oct. 1, 1945		REVERSE LEND-LEASE AID To July 1, 1945	
British Empire	$30,269,210,000	United Kingdom	$4,241,139,000
Soviet Russia	10,801,131,000	Australia	835,004,000
France	1,406,600,000	New Zealand	204,566,000
China	631,509,000	India	639,443,000
American republics	421,467,000	Union of South Africa	885,000
Netherlands	162,157,000	France	200,615,000
Greece	75,416,000	French Africa	70,358,000
Belgium	52,443,000	French New Caledonia	1,171,000
Norway	34,640,000	Belgium	55,646,000
Turkey	28,063,000	Belgian Congo	182,000
Yugoslavia	25,885,000	Netherlands	1,133,000
Other countries	43,284,000	Dutch Curacao and Surinam	917,000
Aid not charged to foreign governments	2,088,249,000	China	2,672,000
		Soviet Russia	2,139,000
Total	$46,040,054,000	Total	$6,255,870,000

By Dec. 31, 1944, lend-lease aid had accounted for about 15 per cent of the total American war expenditures. This aid was apportioned as follows: munitions (planes, tanks, guns, ammunition, motor vehicles, communication equipment, etc.), 51 per cent; other manufactured goods, 24 per cent; food and agricultural products, 14 per cent; services (repairing Allied vessels, training Allied airplane pilots, etc.), 11 per cent.

The accompanying table shows the amount of lend-lease aid given to each country to Oct. 1, 1945. The table also shows the amount of "reverse" lend-lease aid given to the United States. Great Britain was the largest contributor to the reverse lend-lease program. It furnished about one-third of all the supplies, equipment, and services needed by U.S. troops in the British Isles. Great Britain served as the "staging area" for the invasion of France, and it provided U.S. forces with a variety of goods and services from spark plugs to floating ports for that operation (*see* Invasion Tactics).

Linlithgow, Victor Alexander John Hope, Second Marquess of. When Lord Linlithgow became viceroy of India in 1936, he hoped soon to make this land an equal partner in the British Commonwealth. Then came the war. Self-rule after the war was now the best he could promise. Gandhi protested by urging nonresistance in case of invasion. Yet Linlithgow spurred India to muster a million men for Britain and launched extensive farm and health reforms. He retired in 1943, with the puzzle of India's status still unsolved.

Born 1887, Scotland. Served in first World War. Became civil lord of admiralty, 1922; chairman of joint select committee on Indian constitutional reform, 1933.

IT FIRES 850 SHELLS A MINUTE

A Navy aerial gunner in a Douglas Scout dive bomber sights a .50-caliber air-cooled Browning machine gun. Note the radial sight and the "flashproof" muzzle.

MacArthur, General Douglas. Once the heroic defense of Bataan drew world attention, Australia clamored to have the commander, General MacArthur, lead all defense against Japan. He was ordered to do so, and he led the march back from Australia to victory. He accepted the surrender of Japan, and thereafter commanded the occupation of the beaten country. (For military events, *see* Pacific Ocean.)

Born 1880, Little Rock, Ark. Graduated West Point, 1903. Commanded 42d (Rainbow) Division, 1918. Became chief of staff, U.S. Army, 1930; head of U.S. Forces in Far East (Philippines), 1941; 5-star general, 1944.

Machine gun. In the second World War all combat services used the machine gun with telling effect against troops and aircraft. Infantrymen used the .30-caliber and .50-caliber Brownings. Pursuit planes and mobile antiaircraft units mounted .50-caliber guns. Ships, tanks, and bombers carried the 20-mm. Oerlikon and the 40-mm. Bofors. To multiply fire power, the .50-caliber and 40-mm. guns were often mounted in double or quadruple mounts. To give the .50-caliber and 20-mm. guns added accuracy against swift planes, the designers provided gyroscopic sights. On ships, "directors"—giant calculating machines—automatically trained and pointed the 40-mm. guns at flying targets.

McNair, Lieutenant General Lesley J. As commanding general of the army ground forces, 1942–44, McNair trained the U.S. Army for battle. His program of realistic battle-training saved thousands of American lives. He was wounded in 1943 during a battlefront tour of Tunisia. In 1944, he was given an important command in Europe. He was killed in Normandy in July by an American bomb that fell short.

Born 1883, Verndale, Minn. Graduated West Point, 1904. Trained artillerymen, first World War. Became commander, 2d Field Artillery Brigade, 1937; chief of staff, general headquarters, 1940; lieutenant general, 1941.

Mannerheim, Field Marshal Baron Carl Gustav. His countrymen have called Mannerheim the "liberator of Finland." In 1918, after his country had declared independence from Russia, he drove out the Reds, ended civil war, and made it possible to set up a

republic. Finland's ablest soldier, he became field marshal in 1933 and later built the Mannerheim Line of defense posts which withstood many Russian assaults. Later, when more than 70 years old, he led his armies in vigorous but losing wars against Russia in 1939–40 and 1941–44. He served as president of Finland from 1944 to 1946. Failing health forced him to retire at 78.

Born 1867, Louhisaari, Finland. Attended cavalry school in St. Petersburg. Served 30 years in Russian army (up to 1917), rising to the rank of major general.

MARINE CORPS. From a peacetime enlistment of 64,053 men, the U.S. Marine Corps grew to a total strength of 589,852. The Marines fought delaying actions at Wake, Midway, Bataan, and Guam, then took the offensive and led in nearly every island attack in the Pacific campaign. They flew combat planes and manned antiaircraft batteries on large ships. For amphibious warfare they designed special landing craft long before Pearl Harbor.

Amphibious units of the Fleet Marine Force seized the offensive on Aug. 7, 1942, when they attacked and held positions in the Tulagi-Guadalcanal area. They won spectacular victories in the New Georgia group and the Marianas, and at Tarawa, Iwo Jima, and Okinawa (*see* Pacific Ocean). War casualties were 20,310 killed, 54,644 wounded, and 102 missing. Postwar strength is fixed at 7,000 officers and 100,000 men.

MARSHALL, GENERAL GEORGE CATLETT. The outbreak of war in Europe in 1939 found General Marshall ready to build and streamline the U.S. Army. Immediately he was made chief of staff (he had served as acting chief of staff since July 1939). With nearly 40 years of army "know-how" behind him, he quickly mechanized and unified his forces. After the war he was named President Truman's special envoy to China.

Born 1880, Uniontown, Pa. Graduated Virginia Military Institute, 1901. Supervised moving of 15 divisions in Argonne offensive, 1918. Became 5-star General of the Army, 1944.

MARINES STORM ASHORE IN THE PACIFIC

At top, amphibious tractors ("ducks") plow forward to attack Okinawa beach. Below, two Marines crumple, wounded, as their squad attacks a Jap sniper pocket on Saipan, in June 1944. The Marines are carrying full field packs, ready for days of fighting.

MECHANIZED FORCES. After German tanks had sliced through Poland and France in deadly swift campaigns, mechanized forces seemed to many a complete key to success in war. But later experience proved otherwise.

A mechanized force, which fights as well as moves in armored vehicles, can cover from 100 to 200 miles a day on good roads, and deliver crushing blows against poorly trained and equipped enemies. But then it must be refueled, and the men need food and rest. At such times it is highly vulnerable. Land mines, armor-piercing projectiles from high velocity cannon and bazookas, bombs and tanks are also effective defenses in the hands of competent defenders.

Therefore, the Allied forces in the later phases of the war commenced their attacks by achieving unquestioned air supremacy, and making break-throughs (or

GLIMPSES OF "WAR WITH MACHINES"

These special vehicles perform important tasks in mechanized warfare. 1. Amphibious trucks with smoke generators hide a beach. 2. French mud does not stop a doughty jeep. 3. Huge tank trucks provide gasoline and oil. 4. A half track (caterpillar tread in rear) is ready to go anywhere.

landing on seacoasts) with gunfire and infantry. Then the mechanized forces were hurled into the enemy's rear to complete his demoralization and defeat. General Patton's Third Army, for example, followed this order throughout its spectacular career.

MEDICINE IN WAR. Americans wounded in the second World War had twice as good a chance of getting well as those wounded in the first World War. Blood plasma for shock, new drugs to fight infection, and prompt surgical treatment helped reduce the number of wounded who died from 8 per cent to about 4 per cent.

Company aid men accompanied the assault troops and gave strength-restoring plasma to the dangerously injured almost as soon as they fell. At aid stations within 1,000 yards of the front, battalion surgeons dusted sulfa powder into wounds as they dressed them and gave sulfa drugs by mouth. Surgeons at clearing stations injected penicillin in addition to giving surgical first aid. This drug, developed during the war, proved even better than the sulfas for preventing and curing infection. Air ambulances speeded transportation of the wounded to completely equipped hospitals.

In 1942 malaria was the chief disease enemy of United States troops. By 1945 atabrine for treatment, insect-repelling "bombs" and sprays, and other protective measures had reduced the incidence by 75 per cent, and made the disease far less dangerous.

The insecticide DDT prevented epidemics of typhus in North Africa and Italy. United States Army men

MAKING "DUST" CONQUER TYPHUS

U. S. Army men in Naples are mixing DDT with talcum in a half-ton cement mixer. Workers dusted the powder over living quarters and people to kill disease-carrying body lice.

mixed it with talcum and used it as a dusting powder to kill the disease-carrying body louse. They also mixed it with oil for use as a spray. Wide areas were treated by spraying from airplanes.

Sulfa drugs controlled bacillary dysentery. Sulfas and penicillin lowered the death rates of pneumonia and meningitis. Vaccines and toxoids prevented deaths from yellow fever, tetanus, and epidemic typhus. Chemists developed from blood an effective vaccine against measles and other infectious diseases.

STEPS ALONG THE WOUNDED MAN'S ROAD HOME

1. Here a first-aid man slashes the trouser leg of a wounded infantryman in order to apply a first-aid dressing. 2. These front-line aid men are giving blood plasma to a badly injured man before moving him. 3. In a jungle operating room just behind the lines in New Guinea a surgeon operates on a soldier. 4. A nurse takes information from the wounded in an air ambulance flying from Italy to North Africa. 5. This is a ward in the United States hospital ship *Solace*. 6. These veterans are convalescing in a hospital at home. The patient in the foreground is working at a bed handicraft bench.

MOVING FORWARD IN RUGGED TUNISIA

American troops hike to the front lines "somewhere in Tunisia." Soon they will attack the Germans in defensive positions high up in the barren hills ahead.

MEDITERRANEAN AREA. Throughout history the Mediterranean has played an important part in man's affairs; and so it did in the second World War. In this conflict it saw some of the war's bitterest fighting.

Britain's control over the Mediterranean—from Gibraltar in the west to Suez in the east—had remained unbroken for years prior to the outbreak of war. This was vital to British interest, because the most direct routes to the oriental parts of the British colonial empire lay through the Mediterranean. But Fascist and Nazi expansion threatened Britain's position.

Mussolini long had dreamed of making the Mediterranean an Italian "lake." In an effort to realize his ambition, in 1940 he attacked Egypt and Greece. These aggressions ignited almost four years of intense struggle in the Mediterranean. The early chief antagonists were the British and Italians. Later the Germans, represented by their famed *Afrika Korps*, reinforced the Italians, and the tide ran in favor of the Axis.

But with the invasion of North Africa by United States troops in 1943, supremacy in the Mediterranean swung to the Allies. Within six months, combined American and British forces had driven the Axis troops to surrender in Tunisia. The Allies pressed the attack by quickly capturing Sicily, then pursued the Germans into Italy. These victories drove back Axis air power and restored Allied mastery of the Mediterranean. (For details of military events, *see* War in Europe.)

ALLIED SURPRISE ATTACK AT ANZIO

American troops are heading inland after landing at Anzio in Italy. This flanking attack was launched in an effort to disorganize the German defense at Cassino.

WAR-WRECKED NAPLES HARBOR

The goal of the first Allied drive into Italy was the port of Naples. Here we see some of the damage inflicted on ships and piers by Allied bombs and German demolition squads.

TAKING THE STRONGHOLD OF CASSINO

The fighting for possession of Cassino in Italy was some of the toughest of the Italian campaign. Here New Zealand soldiers search a shell-torn house for German snipers.

THE CRITICAL BATTLE AREA OF THE MEDITERRANEAN

This map shows the region often referred to as the "soft underside" of Hitler's Fortress Europe. Of all the territory held by Axis forces, this was the area long considered the one that could be invaded most easily.

CADETS PRACTISE "ABANDON SHIP"

Merchant marine cadets lower themselves into a lifeboat. Maritime service schools teach everything from knot tying to "refresher" courses for a master's license.

MERCHANT MARINE. The number of American merchant seamen grew from a prewar level of 55,000 to a peak of 270,000. The U. S. Maritime Service, a division of the War Shipping Administration, recruited most of these men and trained them in basic and advanced schools. Merchant seamen casualties were 5,638 killed and 581 taken prisoner. The nation spent $22,500,000,000 to build up and maintain its 60,000,000-ton fleet. United States flag vessels carried 268,283,000 tons of cargo and transported nine out of every ten men that crossed the oceans. At the end of the war these ships comprised two-thirds of the world's merchant marine (*see* Shipping; Supply).

MILITARY POLICE. Soldiers with a white MP on a dark blue arm band were a familiar sight in the United States during the war. Usually in pairs, they patrolled the streets in areas where large numbers of servicemen spent their brief leaves hunting recreation. They patrolled trains and stations. These men were members of the Corps of Military Police, a part of the Provost Marshal General's Department. They were assigned to local commanders to help enforce law and order.

In combat zones military police were responsible for protecting civilian life and property from lawbreakers among the troops. They took charge of prisoners of war. One of their big jobs was directing traffic—keeping untangled the rolling, endless lines of motor vehicles necessary to mechanized warfare.

MINES. Explosive mines were used in the second World War to hinder and cripple an advancing enemy.

On the sea, *contact mines* which exploded when a ship struck them, were anchored or floated in enemy harbors or sea lanes to destroy shipping. Small ships called *minesweepers* kept the sea lanes free. *Magnetic* sea mines exploded by a magnetic trigger when a ship passed over them. These destroyed many ships until an electric cable was used on vessels to neutralize the magnetic force and keep the mines from exploding.

On land, many fields of mines were laid to destroy mechanized equipment. These were explosive charges in metal or plastic cases which exploded as the weight of a truck or tank passed over them. Smaller mines called booby traps or antipersonnel mines were set to explode under the weight of a man.

Mine fields were usually cleared by soldiers. First they located the mine by electromagnetic detectors or prodding rods. Then they carefully dug the mines up. Sometimes airplanes bombed mine fields to set off the mines and make the area safe for tanks and men.

MINORITIES. Discontented minority peoples living in alien nations have, throughout all history, helped to foment unrest and war. Each war in turn breeds new minorities as territories change hands. The best plans of the peacemakers have never solved this intricate question. If the minorities all lived on the borders of their homelands, a change of boundary would repatriate them. But many unassimilated groups are "islands" in the midst of other countries.

DEALING WITH DANGEROUS LITTLE LAND MINES

These Americans are dealing with German anti-personnel mines. Two men use a bayonet and a detector to find mines (left). A paratrooper examines a "Bouncing Betty." When the trigger is touched, the mine jumps upward to explode above ground (right).

A country that contains minorities can have unity only if the separate peoples renounce their allegiance to their former fatherland and become assimilated. Switzerland has inhabitants of French, German, and Italian descent. But all are proud to be Swiss. The American people are a unified blend of diverse national origins. But the people were willing, even eager, to become Americans. Most of the European minorities came involuntarily under alien rule because of conquest or boundary changes. In some instances a group belonging to a former conquering race was left behind to secure territory. The antagonisms between minority and majority folk may arise from hatreds born of ancient wars or from differences in religion or culture. Sometimes the ruling class oppresses the minority. Or one people may blame the other for all their economic, political, and social difficulties.

THE MANY MINORITIES WHICH TROUBLE EUROPE

1. Bretons
2. Basques
3. Galicians
4, 5. Catalonians
6. Italians (Corsicans)
7. Austrians
8. Alsatians
9. Belgians
10. Austrians
11. Slavs
12. Croatians, Germans
13. Germans and Hungarians
14. Albanians, Bulgarians, Rumanians
15. Vlachs and Macedonians
16. Turks and Macedonians
17. Turks and Bulgarians in Greece
18. Turks
19. Bulgarians, Turks, and Germans
20. Germans and Hungarians
21. Germans, Bulgarians, Turks
22. Turks and Greeks
23. Bulgarians
24. Ukrainians
25. Ukrainians, with Germans and Poles
26. White Russians, Lithuanians
27. Poles
28. Germans
29. Slavs
30. Poles
31. Czechs
32. Slovaks, Ukrainians, Hungarians
33. Germans, Serbs, and Slovaks
34. Poles
35. Germans and White Russians
36. Germans
37. Finns
38. Swedes
39. Karelians
40. Greeks and Turks

The Peace Conference after the first World War attempted to solve minority problems by "self-determination of peoples." Though the Versailles Treaty reduced by half the minority populations, the newly created nations contained thousands of unassimilated peoples. Hitler took advantage of the minority conflicts. He told the Germans they were a master race, and blamed the Jews for the country's ills. He organized German minorities abroad, and led them to clamor for incorporation into the Reich.

Transfer of minority populations is another approach to the problem. Greeks were returned to Turkey by the Treaty of Lausanne (1923). At the end of the second World War some six million Germans were sent back from Czechoslovakia and Poland.

MITSCHER, VICE-ADMIRAL MARC A. Commander of Task Force 58, the U. S. Navy's hardest-hitting unit, wiry Mitscher used carrier planes to smash Japanese air, sea, and land power throughout the Pacific in 1944 and 1945. In 1942 he had commanded the carrier *Hornet*, base for Doolittle's Tokyo bombers, and in 1943 he headed the Allied air forces in the Solomon Islands.

Born 1887, Hillsboro, Wis. Graduated Annapolis, 1910. Made head of air department, first U. S. carrier (*Saratoga*) and landed first plane on her deck, 1928. Became chief of naval operations for air, 1945.

MOLOTOV, VYACHESLAV. Side by side, Stalin and his best friend Molotov built communistic Russia after the original leaders had gone from power. As a reward for his labors, Molotov served as premier, 1930–41, and after 1939 as foreign commissar. He negotiated the German-Russian nonaggression pact of 1939, but in 1942 signed a 20-year military alliance with Great Britain. He was Russia's head delegate to the San Francisco Conference in 1945. After the war he led Russia's aggressive foreign policy (*see* Peace).

Born 1890, Kirov district. In youth, changed family name Scriabin to Molotov ("the hammer"). Joined Bolshevik party, 1906. Associated with Stalin since 1912.

MONTGOMERY, FIELD MARSHAL SIR BERNARD LAW. In the darkest hour for Allied hopes in Egypt, "Monty" took over the British 8th Army. At El Alamein he crushed the seemingly invincible *Afrika Korps* (*see also* Rommel). Thereafter he led British forces in Sicily, Italy, and in the final conquest of Germany. He was made a field marshal in 1944, and in May 1945 he became chief of British occupation forces in Germany.

Born 1887, County Donegal, Ireland, son of Episcopalian bishop. Graduated Sandhurst, 1908. Served in first World War. Took part in Dunkirk evacuation, 1940.

MOUNTBATTEN, ADMIRAL LORD LOUIS. As chief of combined operations, the handsome great-grandson of Queen Victoria led Britain's knife-wielding commandos in raiding Europe's coasts in 1942. As supreme Allied commander in southeast Asia, he directed the Allied campaign against the Japanese in Burma, 1944–45.

Born 1900, Windsor, England. Entered British navy at 13. Served throughout first World War. At start of second World War commanded Fifth Destroyer Flotilla.

NAVIES. Six months before Pearl Harbor, Congress authorized the building of a "two-ocean" navy. During the war, the Navy fought German submarines in the Atlantic and aided the invasion of Europe. In the Pacific the Navy guarded a 7,500-mile sea front from the Aleutians to Australia; destroyed the Japanese navy; and transported men and matériel.

War developments made the U. S. Navy the largest and most efficient force the world had ever known. At the time of Pearl Harbor, the Navy had 1,557 ships,

STRENGTH OF THE LEADING NAVIES

	Dec. 1941	*Jan. 1946*
Allied Navies		
United States		
Battleships	16	23*
Aircraft carriers	7	32*†
Cruisers	37	67*
Destroyers	171	353*
Submarines	113	206*
Great Britain		
Battleships	14	14*
Aircraft carriers	7	12*
Cruisers	62–64	62*
Destroyers	205–225	259*
Submarines	45–50	115*
Russia		
Battleships	3?	4*
Aircraft carriers	1?	?
Cruisers	9?	9*
Destroyers	60–65?	51*
Submarines	140–175?	140*
Axis Navies		
Germany		
Battleships	3	1
Aircraft carriers	1	—
Cruisers	9	8
Destroyers	45–50	30?
Submarines	130–160	400?
Italy		
Battleships	5	5*
Aircraft carriers	—	—
Cruisers	16	10*
Destroyers	90–105?	11*
Submarines	80–85	21*
Japan		
Battleships	10?	4
Aircraft carriers	7–9	6
Cruisers	44–46	11?
Destroyers	126	39
Submarines	69–70	59
Vichy France		
Battleships and battle cruisers	5	4*
Aircraft carriers	1	—
Cruisers	14	9*
Destroyers	46	15*
Submarines	63	18*

Figures for Japan and Germany are incomplete.
*Fleet Admiral Nimitz's Report to the House Appropriations Committee, May 1946.
†Includes heavy and light carriers (CV and CVL); does not include escort carriers (CVE).

BATTLESHIPS OF THE U. S NAVY—1945*

	Completed	Main Guns	Antiaircraft Guns	Tons	Speed (knots)
In Commission					
Missouri	1944	9 16 in.	20 5 in.	45,000	33
Wisconsin	1943	9 16 in.	20 5 in.	45,000	33
New Jersey	1943	9 16 in.	20 5 in.	45,000	33
Iowa	1943	9 16 in.	20 5 in.	45,000	33
Alabama	1942	9 16 in.	20 5 in.	35,000	30
Massachusetts	1942	9 16 in.	20 5 in.	35,000	30
South Dakota	1942	9 16 in.	20 5 in.	35,000	30
Indiana	1942	9 16 in.	20 5 in.	35,000	30
Washington	1942	9 16 in.	20 5 in.	35,000	28
North Carolina	1941	9 16 in.	20 5 in.	35,000	28
West Virginia	1923	8 16 in.	16 5 in.	31,800	21
Colorado	1923	8 16 in.	16 5 in.	32,500	20.67
Maryland	1921	8 16 in.	16 5 in.	31,500	21.09
Tennessee	1920	12 14 in.	16 5 in.	32,300	21.01
California	1921	12 14 in.	16 5 in.	32,600	21.10
Idaho	1919	12 14 in.	16 5 in.	33,400	22.23
New Mexico	1918	12 14 in.	16 5 in.	33,400	22.23
Mississippi	1917	12 14 in.	16 5 in.	33,000	22.23
Pennsylvania	1916	12 14 in.	16 5 in.	33,100	20.21
Nevada	1916	10 14 in.	16 5 in.	29,000	20.5
New York	1914	10 14 in.	16 5 in.	27,000	20.23
Texas	1914	10 14 in.	16 5 in.	27,000	19.77
Arkansas	1912	12 12 in.	16 5 in.	26,100	20.95
Building					
Kentucky	....	9 16 in.	20 5 in.	45,000	33
Illinois	....	9 16 in.	20 5 in.	45,000	33
Louisiana	....	.....	.....	58,000	.....
New Hampshire	....	.....	.....	58,000	.....
Maine	....	.....	.....	58,000	.....
Ohio	....	.....	.....	58,000	.....
Montana	....	.....	.....	58,000	.....

*Includes prewar specifications where war-time figures not available.

HEAVY AIRCRAFT CARRIERS OF THE U.S. NAVY—1945

	Completed	Main Guns	Maximum Airplane Capacity	Tons	Speed (knots)
Midway	1945	18 5 in.	128	45,000	33 plus
Franklin D. Roosevelt	1945	18 5 in.	128	45,000	33 plus
Lake Champlain	1945	12 5 in.	90–100	27,100	30 plus
Antietam	1945	12 5 in.	90–100	27,100	30 plus
Tarawa	1945	12 5 in.	90–100	27,100	30 plus
Kearsarge	1945	12 5 in.	90–100	27,100	30 plus
Shangri La	1944	12 5 in.	90–100	27,100	30 plus
Bon Homme Richard	1944	12 5 in.	90–100	27,100	30 plus
Bennington	1944	12 5 in.	90–100	27,100	30 plus
Ticonderoga	1944	12 5 in.	90–100	27,100	30 plus
Hancock	1944	12 5 in.	90–100	27,100	30 plus
Franklin	1944	12 5 in.	90–100	27,100	30 plus
Randolph	1944	12 5 in.	90–100	27,100	30 plus
Wasp	1943	12 5 in.	90–100	27,100	30 plus
Hornet	1943	12 5 in.	90–100	27,100	30 plus
Lexington	1943	12 5 in.	90–100	27,100	30 plus
Yorktown	1943	12 5 in.	90–100	27,100	30 plus
Bunker Hill	1943	12 5 in.	90–100	27,100	30 plus
Intrepid	1943	12 5 in.	90–100	27,100	30 plus
Essex	1942	12 5 in.	90–100	27,100	30 plus
Enterprise	1938	8 5 in.	85	19,800	34
Ranger	1934	8 5 in.	70–75	14,500	29.5
Saratoga	1927	12 5 in.	100	33,000	33.9

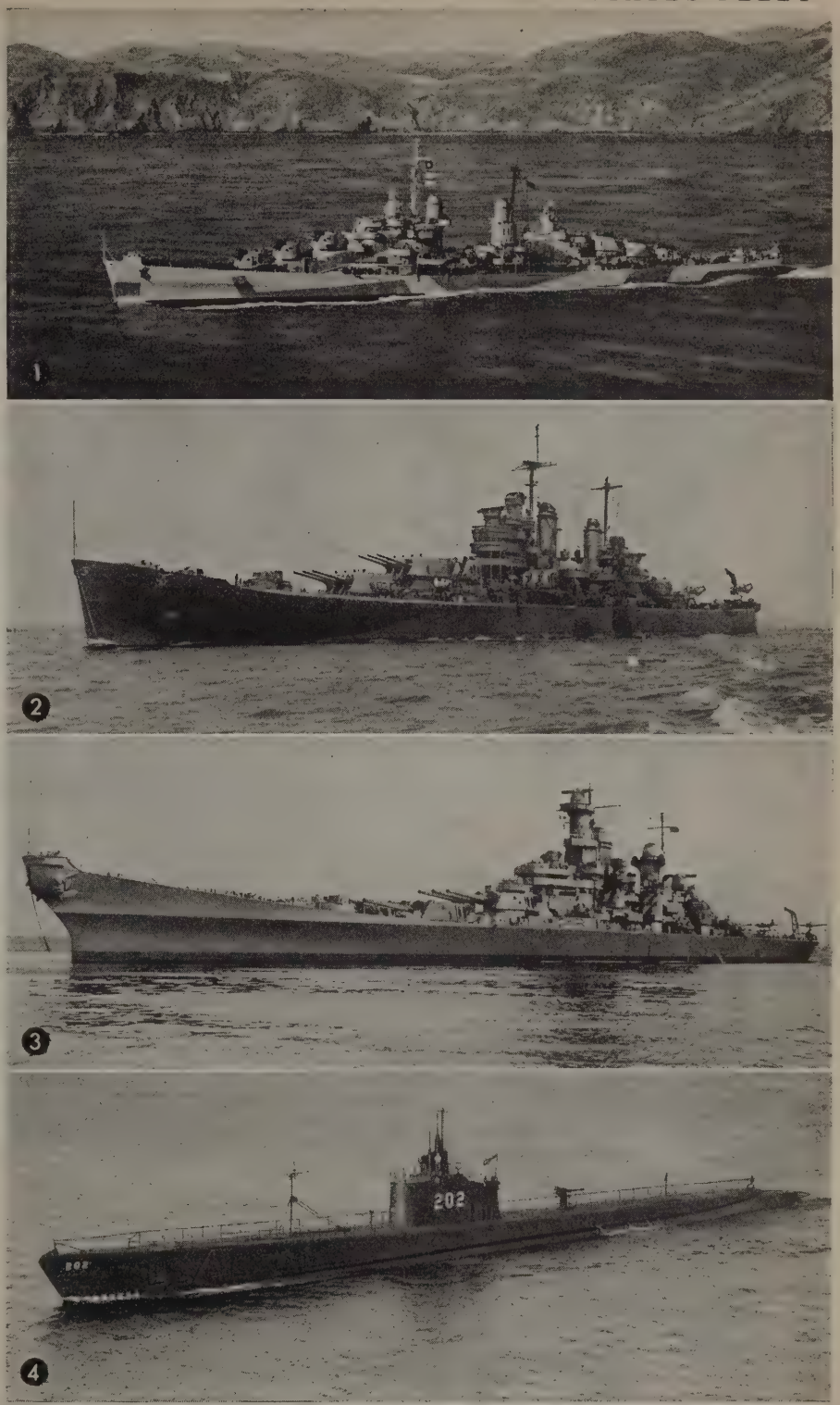
3,991 airplanes, 113 submarines and 293,242 men. At the wartime peak the fleets had grown to 11,596 ships, 37,755 planes, more than 230 submarines, and over 3,300,000 men.

There were many changes in fighting strategy. Air warfare made aircraft carriers, or "flat tops," the backbone of the Navy instead of battleships. In 1941 the Navy had seven carriers. By 1945 there were over 30 aircraft carriers in the Navy. Carrier planes covered the sea to hunt for submarines, destroy enemy aircraft and ships, and aid in amphibious landings. But carriers were extremely vulnerable to enemy air attack. They were protected by the planes and by antiaircraft guns on the carriers and escorting ships. The new 5-inch, 38-caliber dual purpose gun was the most effective antiaircraft weapon. This gun could be used against both enemy warships and airplanes.

Naval aircraft were constantly improved and obsolete types were discarded. Towards the close of the war, more than two-thirds of a heavy carrier's complement were Grumman *Hellcats* and Vought *Corsairs*—fighters that could, if necessary, launch bombs, rockets, or torpedoes. Such heavier aircraft as the Grumman *Avengers* (torpedo bombers) and *Curtiss Helldivers* (dive bombers) were also used on carriers. These carrier planes had special folding wings to conserve space on the carrier. This expedient enabled a carrier to handle as many as 100 planes at one time.

Destroyers became markedly faster and heavier during the war. The last prewar destroyer type was the 1,630-ton *Benson*. During the war, destroyers as heavy as the 2,200-ton *Sumner*

FIGHTING SHIPS OF THE UNITED STATES FLEET



These pictures show how war experience effected the design of American fighting vessels. Notice how they are shaped for speed and how all upper works are gathered together to reduce the area which is vulnerable to bombs. All but the submarine bristle with antiaircraft armament. The vessels shown are: (1) the light cruiser *Reno*; (2) the heavy cruiser *Chicago*; (3) the battleship *Wisconsin*; (4) the submarine *Trout*.

A CARRIER AND ITS WAR BIRDS

Here a carrier of the *Essex* class is steaming ahead with its Hellcat and Helldiver planes on the flight deck. Carriers and planes led throughout in the Navy's attack on Japan.

were built. Most of the increased weight was devoted to heavier armament. The guns on this type of ship could fire more than one ton of steel in 15 seconds. Destroyers proved especially effective in aiding the landing of troops in amphibious attacks (*see* Amphibious Operations).

Although battleships took second place in importance to carriers, they still proved their worth as fighting ships. Battleships had some contact with the Japanese navy and were of special importance in invasion tactics. They were used to bombard enemy coastal positions before troops were put ashore.

Speed of all larger ships was increased by the use of new high-pressure, high-temperature power plants. The new steam pressure was as high as 600 to 800 pounds, in place of the old 150 pounds of pressure. This development saved from 25 to 35 per cent of the fuel. Thus ships could stay at their battle stations longer without requiring fuel supplies. New Diesel engines were also used in auxiliary craft and some warships.

The Navy added many new and useful types of ships to the fleet, such as destroyer escorts, "Mosquito" patrol boats (which had a speed as great as 72 miles an hour), and the crafts for amphibious landings, such as the LSI, LCA, etc. (*See* Amphibious Operations.)

Improved logistics (the science of transportation and supplies) proved so efficient that it was called the Navy's "secret weapon." Formerly, ships had to return frequently to land bases for supplies and fuel. But in the second World War, the Navy kept a "sea train" of refrigeration ships, dry-store ships, and other supply vessels going out to the warships. Tankers under Navy command brought fuel to fighting ships. By throwing fuel lines over from the tanker, a ship could be fueled at the rate of 10,000 gallons an hour while both vessels were moving. Another important factor in Navy efficiency was the seagoing dry docks or "hospitals" for damaged ships. With these, ships could be repaired almost anywhere at sea without having to return to Hawaii or the mainland.

The Marine Corps of the Navy fought from Guadalcanal to Okinawa. There was a detachment of Marines on all large ships. Marines piloted many of the Navy's carrier planes and led in developing and waging amphibious war (*see* Marine Corps).

At the end of the war, the Navy faced the problem of cutting down the gigantic wartime fleet. About 5,000 ships were scheduled for sale or scrapping and 2,200 were to be put in the reserve fleet. The latter were processed so that they could be ready for action in 10 to 30 days. This processing included the use of spun plastics to seal the ship's guns and vital machinery and chemical "dehumidifiers" to take in damp air and send out dry air. This keeps out moisture harmful to metal parts of the ship. In this sealed and dry condition a ship is expected to be preserved in fresh water for 15 years without another dry docking. The Navy also reduced personnel to a planned postwar strength of about 58,000 officers and 500,000 enlisted men, and about 108,000 Marine officers and men.

Reduction in the size of the Navy did not stop the search for new weapons and the study of developments and trends. Invention of the atomic bomb, rapid development of powerful, long-range guided missiles such as

SPEEDING VICTORY WITH QUICK REPAIRS

Wherever needed, the Navy established dry docks like the one above. The docks were made in sections and these were towed to the spot, then welded together.

THIS WAS ONCE THE HEART OF ROTTERDAM IN THE NETHERLANDS

The gutted Groote Kerke ("Great Church") towers over the razed business center of Rotterdam. The neat Dutch have removed the ruins of buildings leveled when the Nazis bombed two square miles of Rotterdam, May 14, 1940, after it had surrendered.

the German V's and the advent of pilotless (or "drone") planes extended possible fighting ranges to hundreds, or even thousands, of miles. Another possibility was use of huge submarines with firing platforms or flight decks, both to deliver attacks and to escape destruction by long-range missiles while at sea. But as long as storm and winter continue to assail the seas, one traditional function of the Navy must remain. Surface cargo ships capable of carrying huge tonnages will always be needed, as far as anyone can foresee; and fighting ships, with personnel competent to man them, will be needed to protect the cargo craft.

Naziism. The National Socialist German Workers' party developed and spread the doctrines of Naziism. In 1933 the party obtained full control of Germany and had a free hand to pursue its policies. The keynote was an all-powerful totalitarian state. The individual had no rights which the state must respect. Business, industry, and education were strictly controlled. A supreme dictator called a *Führer* (or "leader") ruled everything, and legislatures, courts, and administrative departments were his tools. The Nazis taught the racial supremacy of the Germans. They sought to exterminate or enslave all whom they regarded as "inferior peoples." They also taught that the interests of the state overrode all other dictates of justice, morality, and humanity, and any outrage was proper if it worked to the benefit of Nazi Germany. The party emblem was a hooked cross or swastika.

Nehru, Jawaharlal. Although born to wealth, Nehru scorned a life of ease to fight for India's independence, and went to jail many times for civil disobedience to the British. In 1942 he followed Gandhi as leader of the Indian National Congress party. He preached socialism and a classless society. Unlike Gandhi, who glorified poverty, Nehru sought to industrialize India. During and after the war, he demanded a strongly unified (federated) India in opposition to the Moslem League proposal for loosely federated states that could secede at will.

Born 1889, Allahabad; son of a Nationalist lawyer, Motilal Nehru. Studied at Harrow and Cambridge. Admitted to bar, 1912. Worked with Gandhi since 1918. Since 1929, elected four times as Congress president. Wrote 'Toward Freedom' (autobiography).

Nelson, Donald M. From a high position in mail-order merchandising, Nelson was called to organize and direct the biggest supply job the world had ever known. As chairman of the War Production Board from January 1942 to September 1944, he directed the national program of arming and supplying the American military forces. Then a bitter clash with other administration officials brought his appointment as economic adviser to China. In June 1945, he was made president of Independent Motion Picture Producers.

Born 1888, Hannibal, Mo. Graduated U. of Missouri, 1911. From 1912 to 1942, with Sears, Roebuck & Co., (executive vice-president, 1939–42). Served United States as director, Supply Priorities and Allocations Board, 1941–42.

WILHELMINA

The Netherlands Queen

Netherlands. Fear of both Germany and Japan led the Dutch in 1938 to strengthen their army and navy. To guard the Netherlands from invasion by the fast moving German forces, they developed a defense system based upon opening the dikes to let the sea water flood the country.

At the outbreak of war in 1939, however, the Netherlands relied on neutrality. In November 1939 Wilhelmina, queen of the Netherlands, and King Leopold of Belgium offered, as neutrals, to mediate peace between Germany and the Allies. Their offer was refused. Before dawn on May 10, 1940, the Nazi army swept into the little country. Paratroops dropped behind the

A DUTCH HOUSEWIFE RETURNS TO HER FLOODED ISLAND HOME

The R.A.F. bombed open the dikes of Walcheren Island to drive the Germans out of Antwerp. The retreating Nazis then opened other dikes, ruining miles of farmland.

lines before the Dutch could open the dikes. "Fifth columnists" crippled communications. After five days of desperate struggle, the Netherlands surrendered at 8:00 p.m., May 14. Meanwhile Wilhelmina had escaped to London on a British warship. Japan struck next, halfway around the world, by seizing the Netherlands Indies in 1942.

After the surrender, the Dutch organized an underground resistance, directed from London by Wilhelmina's son-in-law, Prince Bernhard. In industry, workers disrupted production by sabotage and slow-downs.

Part of the Netherlands gained freedom when the Allies liberated the southern region in September 1944. But the rest suffered heavy damage in later fighting, especially when the retreating Nazis cut the dikes.

Wilhelmina returned May 3, 1945, one day before the Germans surrendered. She appointed a liberal cabinet to work out the enormous task of reconstruction. The chief problems, aside from stringent shortages of food and materials, included restoring the flooded land and developing a colonial rule acceptable to the Indies.

NEUTRAL NATIONS. Spain, Portugal, Sweden, Switzerland, and the Irish Free State were the only European states which remained neutral throughout the second World War. But apart from actual bloodshed and destruction, they were almost as deeply involved as any belligerent.

Throughout the war, Spain openly favored Germany; and at first, fear of German power inclined the other European neutrals to favor the Axis. The Irish Free State closed its ports to Allied vessels. Sweden and Switzerland filled Axis orders for ball bearings, instruments, and iron. Spain and Portugal supplied wolfram and other materials. But by May 1944, the Allies were strong enough to put an end to this flow of war supplies. Turkey maintained neutrality almost till the end, then declared war on Germany and Japan in February 1945.

NIMITZ, ADMIRAL CHESTER WILLIAM. Nimitz provided the leadership and inspired the teamwork behind the victory drive of the U.S. Pacific Fleet from Hawaii and Australia to the very gates of Japan. Ten days after Pearl Harbor, he was made commander in chief of the Pacific Fleet. By mid-1942, his force defeated the Japanese in the Coral Sea and off Midway. Thereafter he kept the gigantic campaign moving forward and supplied by employing epochal developments in the maintenance of navies and armies over long sea routes. On Dec. 15, 1945, he succeeded King as chief of naval operations.

Born 1885, Fredericksburg, Tex. Graduated Annapolis, 1905. Served as chief of staff to U.S. Atlantic submarine fleet commander, first World War; chief, Bureau of Navigation, 1939-41. Became 5-star admiral, 1944.

NORWAY. Norway hoped to remain neutral in the second World War; but in the seventh month the people in Oslo, the capital, were wakened by gunfire (April 9, 1940). On that same day the Germans seized all important Norwegian ports and began pouring in troops in transport planes. They were aided by a traitorous "fifth column" led by Major Quisling (*see* Quisling).

KING OF NORWAY

Haakon VII

The British sent an expedition to regain Trondheim, but it succumbed to furious German bombing. Another British force took Narvik, an important shipping point for Swedish iron ore; but the defeat in Belgium in May forced withdrawal. Meanwhile King Haakon VII, refusing to rule under German control, fled to England and headed a government-in-exile.

TRAITOR OF NORWAY

Major Vidkun Quisling

All free Norwegian merchant vessels entered Allied service; and within the country patriots carried on a "silent war," sabotaging mines, factories, and railways. The Germans surrendered May 7, 1945, to-

TAKING ON SUPPLIES AT "ISLAND X," NORSE SECRET WEATHER BASE

Meteorologists of the Norse underground manned a secret post on Jan Mayen Island, between Norway and Greenland. During the war it was known as "Island X." Their weather reports aided Allied convoys and transocean planes.

gether with the homeland. The exiled government returned without difficulty, and the Norwegians started reconstruction without internal commotion, although desperately short of everything they needed.

NURSING. *See* Women's Service.

OCCUPIED REGIONS. When the Allies began to rule conquered countries, they found unified action hard to achieve. Disagreements arose over the form of occupation government, over measures to revive productive activity, and over means of restoring the people to health. Differences in policy were particularly sharp between Communist Russia and the Western powers. The Allied armies had set up Civil Affairs Divisions and had trained selected personnel for the work before they invaded Axis-held territories. But occupation governments proved unnecessary in many cases. Governments-in-exile returned to take over administration in the nations of western Europe, in Czechoslovakia, and in the Philippines. In eastern Europe, where Russian forces drove out the Nazis, native civil governments friendly to the Soviet took office. British troops influenced the formation of a Conservative government in Greece when civil war followed liberation.

NORWAY'S MEN OF THE SEA CARRY WAR TO THE GERMANS

This Norwegian destroyer *Stord* was one of several that escaped to England. In this picture the crew runs to battle stations to attack a Nazi submarine pack. Norway's warships and its merchant fleet of some 900 vessels helped supply England and Russia.

In Sicily and Italy an Allied Military Government (AMG) assumed control and helped prevent epidemics and starvation. The American Commission for the Protection and Salvage of Artistic and Historic Monuments aided in restoring art and archives. The AMG gradually turned administration back to the Italians.

Germany and Austria were each divided into four zones, occupied by England, United States, France, and Russia. The Allied Control Council, consisting of the commanders of each national zone, held supreme authority, with unanimous consent required for country-wide policies. In each

zone, local administration was entrusted to Germans who had not been influential Nazis. Later, elections were held to fill local offices. Berlin was held by all four Allies, each having one sector. American occupation headquarters were established at Frankfort-on-the-Main.

But this plan soon developed all the weaknesses of divided authority. The Russians wanted to strip Germany of equipment for heavy industry, and sought to communize the people in its zone. The French wanted to annex parts of western Germany and internationalize the Ruhr. The British and the Americans wanted Germany to produce enough to pay for imports of food and raw materials. Lack of agreement on these points virtually paralyzed the country. (*See also* Germany.)

After the unconditional surrender of Japan, the Imperial government remained in office subject to the authority of General MacArthur, supreme commander for the Allies. A Far Eastern Commission, composed of representatives of the 11 nations to whom Japan surrendered, advised General MacArthur. American troops occupied most of the islands. British forces took over southern Honshu Feb. 1, 1946. Allied policy here, as in Germany, aimed at demilitarization, industrial disarmament, and training in democracy. In Korea, Soviet troops held the industrial region north of the 38th parallel, and United States forces the agricultural south. In June 1946 the United States proposed international control, with safeguards against disunity.

In southeastern Asia and the East Indies the natives generally revolted against renewed white control, and government was largely limited to military rule.

Osmeña, Sergio. When the fall of the Philippines seemed certain, Vice-president Osmeña escaped and reached Washington, D.C., in 1942. He aided President Quezón in setting up a government-in-exile. When Quezón died, Aug. 1, 1944, Osmeña was sworn in as his successor by Supreme Court Justice Robert Jackson. Some two months later, in October 1944, he waded ashore on Leyte with General MacArthur, and on March 8, 1945, he re-established the Commonwealth government in Manila. In April 1946, Osmeña was defeated by Manuel A. Roxas for the presidency.

Born 1878, Cebu. Educated U. of Santo Tomás. Admitted to bar, 1903. Led strenuous public life fighting for Philippine independence. Member, Philippine senate, 1922–35. Elected vice-president (the first under the Commonwealth), 1935; re-elected, 1941.

Pacific ocean. Almost the whole of the Pacific Ocean became the battlefield against Japan in the second World War. Six months after Pearl Harbor, the Japanese controlled the ocean from Asia to the International Date Line, and from their own northernmost islands to about 10 degrees south of the Equator. The American counteraction led to victory in four phases:

1. A *defensive* phase from Dec. 7, 1941, to May 8, 1942, of holding actions on sea and land.

2. A state of *balanced strength*, won June 3–6, 1942, by the American victory in the battle of Midway.

3. A phase of *slow advance* from Aug. 7, 1942, to Aug. 6, 1943. It began with landings on the islands of Guadalcanal and New Guinea, and ended with a victorious naval engagement at Vella Gulf.

4. The final rapid *sweep to victory*. It began with the capture of Tarawa in November 1943, and ended with the surrender of Japan in September 1945.

The detailed record of these advances is given in the Chronology of the Second World War, at the end of this volume. The islands and their peoples are described in an appendix to this account. The more general aspects of each phase of the war follow below.

ALLIED OCCUPATION ZONES IN GERMANY AND AUSTRIA

Berlin and Vienna were jointly administered by the four Allied powers. A sector of eastern Germany was given to Poland; East Prussia was divided between Poland and Russia.

First Phase: On the defensive. Since American grand strategy gave first importance to defeat of the enemy in Europe, only limited forces were available for the Pacific operations. Moreover, several months would be needed for mere movement of shipping to such distant regions as Australia. During this time, the forces in the Pacific theater could only do their best to delay the Japanese advance until a "containing perimeter" of bases for defense and counteraction could be established. The selected

ALLIED ZONES OF OCCUPATION IN THE ORIENT

This map shows how the occupation of Korea and the main islands of Japan was divided among the United States, Britain, and Russia. Most of the responsibility for governing the Japanese fell to the Americans, who occupied half of Korea and most of Japan.

bases were Noumea in New Caledonia, Espiritu Santo in the New Hebrides, and Port Darwin on the north coast of Australia, in addition to Pearl Harbor in Hawaii.

Meanwhile, the Navy, in company with Dutch naval forces in the Netherlands Indies region, fought desperate but losing actions against Japanese invasion fleets in the battle of Makassar Straits (Jan. 23–24, 1942) and the battle of the Java Sea (Feb. 27–29, 1942). Fast carrier units made harassing raids on the Marshalls and the Gilberts. A token force of B-25 bombers, commanded by Lieut. Col. James H. Doolittle, took off from the carrier *Hornet* on April 18, 1942, and bombed Tokyo. And the dogged defenders of Bataan and Corregidor in the Philippines pinned down Japanese strength which might otherwise have been flung against Australia or Hawaii.

During this time, Gen. Douglas MacArthur assumed command of Allied forces in the Southwest Pacific, and Adm. Chester Nimitz took command of naval forces in the Central Pacific. This purely defensive phase culminated May 4–8, when American and Japanese carrier forces clashed in the Coral Sea. The Americans lost the carrier *Lexington*, but inflicted far heavier loss and effectively checked the Japanese advance.

Second Phase: Even strength attained. The battle of Midway (June 3–6, 1942) restored to the United States Navy the balance of strength it had lost at Pearl Harbor. The Japanese had sent an invasion fleet of 88 ships eastward to take Midway Island, a key base 1,200 miles northwest of Hawaii. Two naval task forces, plus land-based fighters and bombers from Midway and Hawaii, met the invaders. In a pitched air-sea battle, the enemy was repulsed, losing five capital ships, 275 aircraft, and many men. The Americans lost the carrier *Yorktown*, one destroyer, and about 150 planes.

The possession of the Japanese code, kept a "top secret" throughout the war, enabled the Americans to know Japanese movements in the Pacific. The Midway victory was a direct result of this interception of vital enemy communications.

By now the Americans had learned to appreciate the power of the air arm and thereafter made it the key to all offensive operations by sea. They appreciated that all but revolutionary methods had to be developed for keeping air, land, and sea forces operating at all times over vast areas distant from supply bases. Most important of all, they realized the need for *unified command*—one man on the spot in each operation with full authority over all the forces involved. Thereafter each operation was undertaken by a *task force*, made up of Navy and Army elements, and commanded by a Navy or Army officer, according to which service seemed to have the "key" rôle. Overall command was exercised by Admiral Nimitz in the "island stepping-stones to Japan" north of the Equator, and by General MacArthur along the island chain from Australia to Japan.

Third Phase: Slow advance. During this span of a year, effort was concentrated upon building up strength in the perimeter bases. But limited offensive campaigns were waged to drive the Japanese from their threatening positions near Australia and the Australian supply line.

The 1st Division of Marines landed on Guadalcanal in the Solomons Aug. 7, 1942, to seize the air field (later called Henderson Field). Later they were supplemented by the 2d Marine Division, the Army Americal Division, and other Army infantry elements. Holding the island during six months of bloody jungle warfare, they wiped out the last enemy units on Feb. 9, 1943.

Two nights after the Guadalcanal landings, the Japanese navy struck at the U. S. Fleet screening the operations at Savo Island. The Navy retaliated on Aug. 23–25, Oct. 11–12, Oct. 26, and Nov. 13–15, 1942 and destroyed a large portion of the enemy fleet.

Meanwhile, American and Australian ground and air forces fought the Japanese for Papua, the southeastern portion of New Guinea. Through jungle, swamps, and the nearly impassable Owen Stanley Mountains, the battle line rocked for six months. On Jan. 23, 1943, the Allies took Buna-Sanananda, thereby lifting the threat of a Japanese invasion of Australia.

The Navy prepared the way for further advance by shattering Japanese strength in the battle of the Bismarck Sea (March 2–6), the battle of Kula Gulf (July 5) by taking Munda (Aug. 6), and in the battle of Vella Gulf (Aug. 6–7,

TARAWA'S LIMP PALMS GIVE NO SHADE TO MARINE WOUNDED

Wounded and exhausted Marines lie at the edge of the water during a brief respite in the Tarawa battle. The island was a formidable fortress, defended by eight-inch guns and five-foot-thick concrete bunkers and blockhouses.

1943). Meanwhile, the Army 5th and 13th Air Forces and carrier planes maintained a steady rain of bombs on the key Japanese stronghold of Rabaul on New Britain.

By late summer, the Americans were securely established on the "defensive perimeter" and ready to hit back. Each commander was poised to launch powerful amphibious attacks, backed by adequate reserve strength and by ever-mounting supplies. During all this time, American submarines, operating independently of the fleets, waged intensive war against Japanese shipping (*see* Submarine). They hunted along the supply routes between Japan and its possessions and even cruised into Tokyo Bay. In all, they came close to destroying the Japanese merchant marine.

Fourth Phase: Sweep to victory. The advance to victory began with the Marine assault (Nov. 21–24, 1943) on Tarawa and near-by Makin in the Gilbert Islands, 2,500 miles southwest of Pearl Harbor. On Tarawa, the 2d Marine Division lost 913 men. Next came the capture of Kwajalein (Feb. 1–6, 1944) and Eniwetok (February 21) in the Marshalls. Carrier planes neutralized Truk on February 17, and heavily bombed Saipan in the Marianas on February 21. Now the Navy ruled the seas for 3,000 miles from Hawaii.

By the spring of 1944, MacArthur's forces from the south had isolated two Japanese armies in Bougainville, New Ireland, and New Britain. They landed in Hollandia on April 22 and completed the conquest of New Guinea by May 21. During the next 11 weeks, the Southwest Pacific forces established themselves 800 miles closer to the Philippines by occupying Biak and Noemfoor, islands off the northwest tip of Netherlands New Guinea. On September 14 they landed on Morotai in the Halmahera group.

Supported by the 3d Fleet, the Marines invaded the Marianas—Saipan falling on July 8, Tinian on August 1, and Guam on Aug. 8, 1944. As soon as airfields could be established, Super Fortresses (B-29's) began giving Japan itself a terrific pounding. Some B-29's from China joined in the attack.

Recapture of the Philippines was heralded by the capture of the Palau Islands (including Peleliu, the principal scene of action) near Mindanao on Oct. 13, 1944. This was followed by an attack on Leyte Island, October 20. The Japanese knew that loss of the Philippines would cut them off from the East Indies; so they sent most of their navy against the American 3d and 7th Fleets. In the ensuing second battle of the Philippines they were decisively beaten.

The effort to capture Leyte met a last-ditch stand. The Kamikaze (suicide) planes first appeared here, and the American transport ships were in constant danger. Organized resistance did not end until Dec. 26, 1944.

After by-passing or easily securing the surrounding islands, the U. S. 6th Army landed on Luzon, Jan. 9, 1945. The invasion armada steamed into Lingayen Gulf, the same route the Japanese had used in 1941. Filipino guerrilla units joined the 8th Army in heavy fighting against determined resistance. Manila was not entered until February 4, but by July 5, 1945, MacArthur announced complete liberation of the islands.

Iwo Jima, in the Volcano Islands, 750 miles from Japan, lay in the direct route of B-29 flights from the Marianas, and from it Japanese fighter planes harassed the bombers. To remove this menace, the 4th, 5th, and 6th Marine divisions invaded Iwo Jima Feb. 19, 1945, and conquered it after four weeks of desperate, costly fighting. The Marines suffered 4,189 dead, 15,308 wounded, and 441 missing.

To tighten the blockade around Japan, a combined Army-Marine force landed April 1 on Okinawa, largest of the Ryukyu chain and only 350 miles from the Japanese homeland. The force met suicidal resistance from the Kamikaze planes, which crash-dived against the invasion ships, and from the strongly entrenched army, burrowed deep in the Okinawa plains. Not until June 21 were the last defenders eliminated. Now the United States was in a position to invade Japan itself.

Japanese naval power was wiped out, and the Americans could cut off imports of desperately needed materials. Japanese war industry was virtually shattered by B-29 bombing, and the cities were rapidly being ruined. But the Kamikaze air corps was still ready to die in attacking American ships, and

the home army was strong and fanatically determined to fight. The United States therefore decided to use a newly devised weapon which could not be withstood.

The first atomic bomb was dropped on Hiroshima on August 6, 1945, and the second on Nagasaki August 9. On August 10, Japan sued for peace, surrendering August 14. The war which had begun 3,400 miles away and 44 months before was over.

Pacific Island Groups

The islands of the Pacific are of three different natural types. Some, like New Guinea, are part of a continental shelf. Some, like the islands of the Hawaiian chain, are the tops of volcanoes. Still others, like Tarawa, were built up by coral polyps. If classified by the racial type of inhabitants, they fall into five groups: Melanesia, Polynesia, Micronesia, Indonesia, and the nontropical islands. Since the races are usually mixed, this classification is not clean-cut, but for most purposes it is convenient and will be followed here.

Melanesia—The word Melanesia means "islands of the blacks." The island chain forms a crescent, beginning at New Guinea and running east and south through the Bismarck Archipelago (the Admiralties, New Britain, New Ireland), the Solomons (Bougainville, Guadalcanal), the Santa Cruz Islands, the New Hebrides, and the Loyalty Islands (New Caledonia). All lie below the Equator and west of the International Date Line. The climate is humid and malarial. The islands themselves include all three of the natural types.

The Melanesians are black, Negroid-featured, and short. Pigmy tribes exist in isolated parts of New Guinea and the New Hebrides. Many of them were once cannibals, and all of them have a primitive but complicated culture. They helped the Allies greatly by acting as scouts and guides. The population of Melanesia is about 2,000,000.

Except for Dutch New Guinea and the French-owned Loyalty Islands, Australia and Great Britain rule Melanesia. France and Great Britain jointly control the New Hebrides Condominium.

Polynesia ("many islands") lies east of the 180th meridian. The southeast end of the chain begins at the Tonga or Friendly Islands and runs through Samoa and the Cook Islands, the Society Islands, (Tahiti) and the far-flung Tuamotu Archipelago. From there the chain swings north to the Marquesas and ends at Hawaii. The islands are mainly volcanic in origin.

The Polynesians are the handsomest of the Pacific races. Great swimmers, fishermen, and sailors, they live on fish and the plants that grow in wild profusion on their fertile islands. Economically indolent because of the natural abundance, they are intelligent and socially well-developed. The Hawaiian population is largely composed of a varying blend of Oriental, Polynesian, and Caucasian bloods. There are about 300,000 Polynesians.

The Tonga Islands have a constitutional monarchy under a British protectorate. Samoa is divided between two governments—the United States and New Zealand. The French govern the Society Islands, the Tuamotu Archipelago, and the Marquesas. Hawaii has been a United States possession since 1898.

The Galápagos Islands, 600 miles off the Ecuador coast and far east of Polynesia, are isolated from both the continent and any of the island chains. Inhabited only by an Ecuadorian penal colony and a few settlers, the islands are a natural museum of peculiar fauna and flora. They are completely volcanic, surfaced by great loose slabs of lava plates. The area abounds in turtles, lizards, and birds in great variety.

Micronesia ("small islands"). These islands form a crescent-shaped chain, lying north and northeast of Melanesia. Beginning at the Palaus near the Philippines, the chain bends north to the Marianas (Guam, Saipan, Tinian), then east through the Carolines (Ulithi, Yap, Truk), the Marshalls (Kwajalein, Eniwetok), and finally south through the Gilbert, Ellice, and Fiji islands. All Micronesia lies west of the International Date Line.

Though tropical, the islands are generally free of malaria. Most of them are small coral reefs and atolls; on them the people look mainly to the sea and to the coconut palm for food. The larger islands are richer in resources and the people more civilized. The natives in the western part of the chain resemble the Filipinos and Malays. Those in the east have strong Polynesian traits. The natives of Guam, called Chamorros, are of mixed Micronesian, Filipino, and Spanish stock. They are highly intelligent, good farmers, and good citizens. The Micronesians number about 2,000,000.

Before the war, the Japanese governed the Palaus, the Marianas (except Guam), the Carolines, and the Marshalls under a League of Nations mandate. The British ruled the Gilbert, Ellice, and Fiji islands. The United States Navy governed Guam.

Indonesia is a convenient name for the Netherlands Indies, the Philippines, and Formosa. The Netherlands Indies include much of the Malay Archipelago; Sumatra, Java, parts of Borneo and New Guinea, Celebes and the Molucca Islands, and a number of small island groups. Agriculture and oil production are the chief activities. The land is very fertile, and the Dutch-supervised plantations raise much rubber, coffee, sugar, and tobacco. Borneo is the main source of Far Eastern oil.

The native people are called Indonesians. They are of the Malayan type—small, brown, with thick lips, broad noses, and straight hair. There has been much intermarriage between the Dutch and the Indonesians. Since the war's end the natives have strongly insisted upon self-rule. The population is about 70,000,000—the most densely inhabited island group in the Pacific.

The Philippines are part of the Asiatic continental shelf. Lava ash from the many active and extinct volcanoes gives the islands their immense fertility. The principal crops of this agrarian country are rice, hemp, tobacco, and sugar. The climate is tropical, with alternate dry and rainy seasons. The 7,083 islands, only 11 of which are important, have about 16,000,000 inhabitants. The Filipinos and Moros are of Malay descent; the Negritos and Igorots are indigenous. In addition to the Spanish and English of the educated people, the native dialects are Tagalog, Ilokano, and Visayan.

Formosa (from the Portuguese "beautiful") lies 800 miles south of Japan and just off the China coast. The population includes about 150,000 Formosan aborigines, 5,000,000 Chinese, and 300,000 Japanese. The semitropical land is rich, producing much tea and rice. The forests yield tropical woods and camphor. Japan acquired Formosa in 1895.

The Nontropical Islands. The 55 islands of the Ryukyu Archipelago stretch 570 miles from Formosa to Kyushu in Japan. The 577,000 people are mainly Japanese, but other Asiatic bloods appear. The islands are poor, swept by heavy rains and typhoons. Naha is the principal city of the largest island, Okinawa.

Close to Siberia, the Kurile Islands extend for 710 miles from Kamchatka Peninsula to the northern end of Japan. The volcanic islands are peopled by 15,000 Ainus. The climate is foggy and harsh. Of no economic value, they are important in North Pacific military strategy.

The Aleutian Islands, like the Kuriles, are of military importance only. There are about 14 large islands in the 1,200-mile chain, the principal ones being Unimak (Dutch Harbor), Kiska, and Attu. The sparsely inhabited islands are treeless and wrapped most of the year in mist and fog. The chain forms part of the territory of Alaska.

PATTON, GENERAL GEORGE S., JR. Patton injected the spirit of a cavalryman into mechanized war. Shunning the facilities of a headquarters, he was constantly near the front, urging commanders to utmost effort, directing seizure of local advantages, and inspiring his men by his own fearless, tireless effort. He was nicknamed "Old Blood and Guts," but his real policy was that swift victory spared most lives in the end.

His leadership was justified by results in Morocco in 1942, at El Guettar in Tunisia (March 1943), and in the contribution his 7th Army made to the conquest of Sicily. During the following winter he was kept from public notice because he had slapped a hospitalized soldier in a mistaken effort to restore the man's spirit; but after D-Day in June 1944, he reached his pinnacle

of achievement and fame by leading the 3d Army from Saint Lô in Normandy across France and Germany into Czechoslovakia in the final campaigns of the war.

Thereafter he was named military governor of Bavaria, but lack of conformity with American policy brought transfer to a nominal command in October 1945. He was hurt in an automobile collision December 9, and died at Heidelberg on December 21. On Christmas Eve he was buried in an American military cemetery near Luxemburg.

Born 1885, San Gabriel, Calif. Graduated West Point, 1909. Organized American Tank Center at Langres, commanded 304th brigade of Tank Corps, 1st World War. Commanded cavalry squadron, 1921-22. Took command, 2d Armored Division, 1941.

PEACE. Death and destruction during war make the prospect of peace doubly desirable. The people of the world, therefore, make strong efforts to find a way of settling national quarrels without war.

This led to the League of Nations after 1918; but the effort failed when Europe went to war in 1939. During the second World War, Allied leaders often discussed plans for peace. At Moscow in 1943, foreign ministers and ambassadors of the United States, Russia, Great Britain, and China issued a Four Nations Declaration. In this they agreed to plan an international organization for peace. The next step was taken at Bretton Woods, N.H., in July 1944. There, representatives of 44 United Nations set up a world bank and monetary fund to be used for stimulating world trade and rebuilding devastated countries after the war (*see* Bretton Woods).

Then work was started on an organization to enforce postwar peace at the Dumbarton Oaks conference in 1944. Representatives from Russia, the United States, Great Britain, and China brought their ideas and plans to this meeting, and their secret discussions resulted in a "World Organization Charter."

WHEN "ALLIED" COUNTRIES WENT TO WAR WITH "AXIS" NATIONS
(According to Department of State Bulletin, Aug. 12, 1945)

	Bulgaria	Finland	Germany	Hungary	Italy	Japan	Rumania
Argentina			3/27/45			3/27/45	
Australia	1/ 6/42	12/ 8/41	9/ 3/39	12/ 8/41	6/11/40	12/ 8/41	12/ 8/41
Belgium			5/10/40		11/23/40	12/20/41	
Bolivia	4/ 7/43		4/ 7/43	4/ 7/43	4/ 7/43	4/ 7/43	4/ 7/43
Brazil			8/22/42		8/22/42	6/ 6/45	
Bulgaria			9/ 8/44				
Canada		12/ 7/41	9/10/39	12/ 7/41	6/10/40	12/ 7/41	12/ 7/41
China			12/ 9/41		12/ 9/41	12/ 9/41	
Costa Rica			12/11/41		12/11/41	12/ 8/41	
Czechoslovakia	12/16/41	12/16/41	9/17/38	10/ 7/38	12/16/41	12/16/41	12/16/41
Dominican Republic			12/11/41		12/11/41	12/ 8/41	
Ecuador						2/ 2/45	
Egypt			2/26/45			2/26/45	
El Salvador			12/12/41		12/12/41	12/ 8/41	
Ethiopia			12/ 1/42		12/ 1/42	12/ 1/42	
Finland			3/ 3/45				
France			9/ 3/39		6/11/40	12/ 8/41	
Greece	4/24/41		4/ 6/41		10/28/40	6/30/45	
Guatemala			12/11/41		12/11/41	12/ 9/41	
Haiti	12/24/41		12/12/41	12/24/41	12/12/41	12/ 8/41	12/12/41
Honduras			12/13/41		12/13/41	12/ 8/41	
Hungary			1/20/45				8/24/44
India	12/13/41	12/ 7/41	9/ 3/39	12/ 7/41	6/11/40	12/ 7/41	12/ 7/41
Iran			9/ 9/43			2/28/45	
Iraq			1/16/43		1/16/43	1/16/43	
Italy			10/13/43			7/15/45	
Lebanon			2/27/45			2/27/45	
Liberia			1/27/44			1/27/44	
Luxemburg	5/10/40		5/10/40	5/10/40	5/10/40	5/10/40	5/10/40
Mexico			5/22/42		5/22/42	5/22/42	
Netherlands			5/10/40		12/11/41	12/ 8/41	
New Zealand	12/13/41	12/ 7/41	9/ 3/39	12/ 7/41	6/11/40	12/ 8/41	12/ 7/41
Nicaragua	12/19/41		12/11/41	12/19/41	12/11/41	12/ 8/41	12/19/41
Norway			4/8–9/40			7/ 6/45	
Panama			12/12/41		12/12/41	12/ 7/41	
Paraguay			2/ 8/45			2/ 8/45	
Poland			9/ 1/39			12/11/41	
Rumania			8/24/44	8/24/44			
Saudi Arabia			3/ 1/45			3/ 1/45	
Syria			2/26/45			2/26/45	
Turkey			2/23/45			2/23/45	
Union of So. Africa	12/13/41	12/ 8/41	9/ 6/39	12/ 8/41	6/11/40	12/ 8/41	12/ 8/41
Union of Soviet Russia	9/ 5/44	6/25/41	6/22/41	6/27/41	6/22/41	8/ 9/45	6/22/41
United Kingdom	12/13/41	12/ 7/41	9/ 3/39	12/ 7/41	6/11/40	12/ 7/41	12/ 7/41
United States	12/13/41		12/11/41	12/12/41	12/11/41	12/ 7/41	12/12/41
Uruguay			2/22/45			2/22/45	
Yugoslavia	4/ 6/41		4/ 6/41	4/10/41	4/ 6/41	12/ 7/41	

The countries in the left-hand column are those which went to war (on the dates shown) with the Axis nations, listed across the top of the table. The five nations indicated by italics later declared war against their former partners.

The charter was based on the coöperation of all the United Nations in an effort to preserve peace. Each nation would have to surrender some of its national sovereignty to the organization, but could express its views in a General Assembly. A Security Council was set up to act as a policeman which would take steps to crush an "aggressor" nation before a serious conflict erupted (*see* United Nations).

The Dumbarton Oaks plan was not complete. There was no procedure for voting. The strength of the armed forces to be controlled by the organization was not decided. An aggressor nation was not defined. But the

basic plan was taken back to the Allied governments for suggestions and approval.

In 1945 all the United Nations met at San Francisco to discuss the Dumbarton Oaks plan. The delegates completed and amended it, and the United Nations Charter was signed June 26, 1945.

Peace came to the world as Germany surrendered to the Allies in May and Japan in September 1945. Both of these surrenders were unconditional and gave the Allies complete charge of building and preserving the peace on their own terms.

Stalin, Truman, Churchill, and Attlee met at Potsdam before Japan's surrender to discuss peace plans. The job of making peace treaties was left to a council of foreign ministers, which was created at this meeting. The council's members were Byrnes of the United States, Bevin of Great Britain, Molotov of Russia, Bidault of France, and Wang Shi Chiek of China.

SIGNING THE JAPANESE SURRENDER AT TOKYO

On Sept. 2, 1945, Japanese representatives boarded the American battleship *Missouri* in Tokyo Bay to sign formal surrender documents. General of the Army Douglas MacArthur, supreme Allied commander in the Pacific, broadcast the certification to a relieved world.

The foreign ministers had their first meeting in London. They had the important job of writing treaties for Italy, Rumania, Hungary, Bulgaria, and Finland. Later they were to handle a settlement with Germany. As the ministers had such a great responsibility in shaping the postwar world, the results of their meetings would vitally affect the peace. Almost at once there was a split over procedure between Russia and the Western powers (the United States and Great Britain). Russia did not want France and China to aid in making the treaties. The Anglo-American powers wanted to follow the Potsdam agreement whereby the five powers were to coöperate in writing the treaties.

In later meetings at Moscow and Paris, the split between the nations continued and broadened to other issues such as which nation should control the seaport of Trieste, and how much reparations should be demanded from Italy. These differences prevented any progress on the treaties.

This same difference of opinion between Russia and the Anglo-American powers was seen in the United Nations' organization. When the Security Council met in New York, it received a complaint from Iran that Russian troops were not leaving Iranian territory as promised. Gromyko, the Russian representative, re-

THE GERMANS SURRENDER AT REIMS, FRANCE

On May 7, 1945 (announced May 8), the remnants of the German military forces acknowledged defeat. In the left foreground German naval and army commanders watch Allied officers sign the surrender terms at Allied headquarters in a French schoolhouse.

DESTRUCTION AT PEARL HARBOR

The destroyer *Shaw*, its forward magazine exploded, lies wrecked and twisted in a heavily bombed floating dry dock. Pearl Harbor crews raised the vessel and the dock, and each one served in the offensive against Japan.

fused to attend Security Council meetings while the Iranian question was discussed.

The lack of coöperation among the three great powers was a serious threat to world peace and provided a grave test for the new United Nations' organization. The disputes between the Anglo-American and Russian representatives showed that the nations were returning to their old fears and desires. Russia feared that an Anglo-American bloc was growing up against it. Russia tried to protect itself by controlling its neighboring countries—Hungary, Rumania, and Yugoslavia. The Western powers feared the spread of Communism. They believed that Russian control of the Balkans and Trieste was a threat to England's life line through the Mediterranean Sea. Thus as long as the nations were afraid to give up part of their national sovereignty to the world organization, the fight for a permanent peace was not finished.

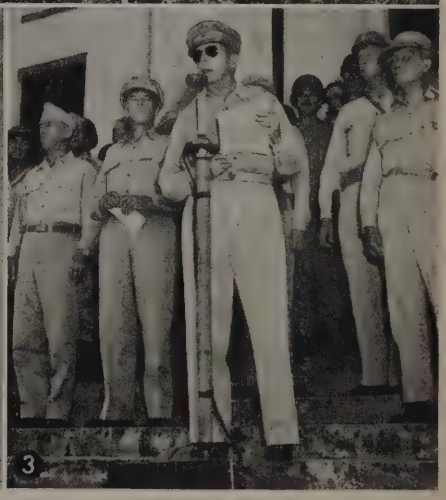
Pearl Harbor. While diplomats negotiated in Washington, the Japanese started war against the United States by assailing the Pacific Fleet in its anchorage at Pearl Harbor, Hawaii. On Dec. 7, 1941, at 7:55 a.m. (Hawaii time), a force of 105 Japanese fighters and bombers from three carriers swept in and caught the defenders by surprise in the midst of Sunday morning activities.

They sank the battleship *Arizona* and severely damaged seven others. They sank or severely damaged three cruisers, three destroyers, and several auxiliary vessels. They set fire to hangars, warehouses, and dock installations, and destroyed nearly all the 475 navy and army planes on the station. They killed 3,303 men.

A few days later the two service commanders, Adm. Husband E. Kimmel and Lieut. Gen. Walter C. Short, were relieved from duty for failure to keep their command secure from surprise. Several investigations and partial reports were made, but no complete story came until a public congressional investigation was held late in 1945, after the end of the war.

The commanders contended that they lacked the planes needed for "all-round" continuous patrols, and that Washington had failed to transmit secret information about Japanese intentions. The military author-

WAR SCENES IN THE PHILIPPINES



1. The shambles that was Manila when American forces captured the Intramuros section Feb. 4, 1945. 2. Corregidor Island in Manila Bay where Americans withstood months of shelling and bombing in underground ammunition tunnels in 1942. 3. General MacArthur addressing the Filipino people at Tacloban, Leyte. President Sergio Osmeña, far right.

ities contended that better security could have been provided with the means at hand. Indeed, it had been known from the time of the attack that an army radar operator, Pvt. Joseph L. Lockhard, had stayed on after night duty the morning of the attack and had detected the approaching Japanese planes. But his superiors ignored his warning. Lockhard won a commission for his feat.

PÉTAIN, HENRI PHILIPPE. When the Germans were breaking through the French lines in May 1940, France turned to its most famous living soldier, Marshal Pétain. Under Pétain's leadership the French had held fast against Germany's furious thrusts at Verdun in 1916. In the 1940 crisis Premier Reynaud called Pétain to Paris as a member of the government council.

Pétain was an old man then—84. Later it was said that he had always been a defeatist. His appointment did nothing to stop the *blitzkrieg*. By the middle of June, France's armies were falling back over roads blocked with refugees. Pétain succeeded Reynaud as premier and asked Germany for an armistice.

In July Pétain moved his government to Vichy. He entrusted preparation of a new constitution to Pierre Laval, pro-Nazi. He assumed dictatorial powers as "chief of state." In October he met Hitler and agreed on collaboration.

The volcanic Philippine Islands extend north and south for more than 1,100 miles between the Pacific Ocean and the South China Sea. The rugged, forested land and hot, rainy climate made warfare difficult. Japanese hid in remote hills months after the war ended.

In liberated France in 1945, a high court tried Pétain for treason. His defense was that he had tried to save France. Nevertheless, the jury found him guilty of "intelligence with the enemy." General de Gaulle, president of France's provisional government, commuted his death sentence to life imprisonment.

Born 1856. Educated at St. Cyr military school; commissioned a lieutenant, 1878, brigadier general, 1914. Commanded offensive near Arras, 1915; Verdun, 1916. General-in-chief, Western Front, 1917. War minister, 1934. Ambassador to Spain, 1939-40.

PHILIPPINE ISLANDS. These tropical islands off the coast of Asia fell as early prey to Japan's drive for dominance in the Far East. The Japanese first bombed this American possession on Dec. 7, 1941 and began landing troops on Luzon, December 10. Commanding Gen. Douglas MacArthur had only 19,000 United States troops, 12,000 Philippine Scouts, and several thousand partially trained reservists. His air force numbered 35 Flying Fortresses and 100 or so lighter craft. His forces heroically defended Bataan and Corregidor but sickness, lack of supplies, and overwhelming

Japanese power compelled surrender on May 6, 1942.

The Japanese set up a puppet government with Philippine collaborators in office, but the great majority of the people remained loyal. Guerrillas hidden in the forests continued to harass the occupation troops. Escaped American officers helped train them. Intelligence men, technical specialists, and equipment were smuggled in by submarine; and guerrilla forces were ready to join in the fighting when General MacArthur redeemed his promise to return and free the islands.

American amphibious forces landed on Leyte Island, Oct. 20, 1944. The battle for this island was long and bitter. But American control of the sea soon prevented Japan from supplying and reinforcing its armies, so the reconquest of the other islands moved more swiftly. At Manila, the Japanese made a last-ditch stand that virtually destroyed the city. (For details of military action, *see* Pacific Ocean.)

When the war broke out the Philippines were a self-governing commonwealth, and independence had been promised for July 4, 1946. As rapidly as territory was liberated, it was returned to commonwealth rule. Manuel Roxas was elected third president in April 1946, and a new legislature was chosen. The U. S. Congress appropriated $525,000,000 for war damage and transferred $100,000,000 in surplus property to aid in the country's restoration. It also set up a preferential trade agreement which admitted the young republic's exports to the United States duty free for eight years.

POLAND'S WAR-SHATTERED CAPITAL

This air view shows how bombs and shells leveled entire sections of Warsaw, a city of 1,265,000 people. Observers called it "Europe's most ruined city."

PHOTOGRAPHY. War advances in photography were aimed largely to improve the methods of getting aerial pictures for reconnaissance and mapmaking. Strip cameras were developed to photograph enemy territory in one continuous run. These shutterless cameras took 200 feet of pictures. The pictures could be taken at heights up to 30,000 feet above the ground.

A revolutionary change in lenses was the *glassless* type made of transparent plastics, such as *methacrylate* and *polystyrene*. These lenses were light, required no polishing, and were not affected by extreme temperatures. Speedier lens action was obtained by coating the lenses with transparent antireflecting material. Hence from 20 to 30 per cent more light reached the film.

GLIMPSES OF PHOTOGRAPHY IN ACTION

Photographers were everywhere during the war. An Australian on Borneo has ordered a Japanese to surrender, and a cameraman is ready for the picture (upper left). A photo reconnaissance plane returns to base, and a soldier removes the film holder (lower left). Experts study the pictures for information about the enemy (lower right.)

HOW THE SECOND WORLD WAR DESTROYED POLAND AND HOW PEACE RESTORED IT

In the map at the left, the dotted line along the Bug River shows how Germany and Russia divided conquered Poland in 1939. The map at the right shows how the Allies restored Poland in 1945. Russia kept most of its gains. As compensation, Poland received a portion of East Prussia and a slice of Germany west to Stettin.

POLAND. The story of Poland is a tragic one. A great kingdom in the Middle Ages, it was divided up in the 18th century by Prussia, Austria, and Russia. After serving as a battleground in the first World War, it was patched together again in 1918. The new republic, wedged in between its old foes, at first looked to France for protection. But in 1932 its government signed a pact with Russia and in 1934 with Germany. Hitler nevertheless unloosed a "war of nerves" against Poland in 1939, demanding Danzig and the "Polish Corridor." On Sept. 1, 1939, he struck without warning. Nazi "panzer" divisions rolled into Poland while Nazi planes bombed towns and railroads. The second World War was launched.

In 16 days the battle of Poland was over except in Warsaw, which held out valiantly until September 27. Again the country was partitioned, western Poland going to Germany and eastern Poland to Russia, which had marched in September 17. Two years later all Poland fell under the Nazi yoke when the Germans invaded Russia.

On Jan. 4, 1944, the Russians recrossed the Polish border, driving the Germans before them. On July 25 they took Lublin and set up a Communist government, ignoring the Polish government-in-exile in London. In August they reached Praga, the eastern suburb of Warsaw. Here they halted while the Polish underground in Warsaw waged a desperate, losing battle against the Nazis. Finally on Jan. 17, 1945, the Red army entered the war-wrecked capital.

The Nazi occupation had cost Poland a fifth of its population. The Germans exterminated more than two million Polish Jews, dragged off Poles to work in Germany, and resorted to torture and mass murder to crush the underground. Russia took sweeping measures against "reactionary elements," imprisoned democratic leaders, and, ignoring the protests of the Western powers, set up a Communist-dominated government.

POLISH REFUGEES FLEE FROM DEVASTATED HOMELAND

When the Nazi armies swept Poland, thousands of refugees fled eastward. This tired, determined group has trudged some 1,800 miles into Iran. In the background loom the Caucasus Mountains, which they crossed.

"THE FORTUNES OF WAR" FALL UPON VARIOUS PRISONERS

American prisoners, their hands bound, halt briefly on the infamous "death march" from Bataan to Cabanatuan prison camp (top left). On Kwajalein, a Japanese soldier emerges from a demolished blockhouse to surrender to U. S. Marines (top right). German prisoners of war, hired out to local farmers, harvest an Illinois crop (bottom).

PRISONERS OF WAR. The Geneva Convention, signed by 47 nations in 1929, provided standards for humane treatment of prisoners of war. The United States embodied these standards in American law. But feelings aroused by war brought widely varying observance.

By V-E Day the Allies held 7,617,794 prisoners on the Western Front alone. They received humane treatment, adequate food and shelter, and suitable work in quartermaster depots and on reclamation projects. In the United States, 362,170 Germans, 49,784 Italians, and 5,080 Japanese were held in 135 base camps and 308 branch camps. These PW's (so called from the initials stenciled on their uniforms) also received proper treatment. Those who agreed to work received 80 cents a day in canteen coupons. A majority of the Germans did farm work and performed nearly 30 million man-days of labor in 1944. Many of the Italians were grouped in service units for various tasks. They received certain privileges and part of their pay in cash.

The German record offered a grim contrast. By March 1945, the Germans had taken a total of 2,173,000 military prisoners, including 75,850 Americans. But from the time the United States entered this war, the Allies always held a superior number of Germans and could inflict reprisals for ill treatment if they wished. Therefore the Germans maintained "show" camps for the benefit of neutral Red Cross workers, and in these they observed the Geneva Convention. Elsewhere, however, they forced Allied prisoners to work in munitions factories, beat and starved others, and murdered thousands in cold blood. Hundreds of Americans perished in the notorious Bad Orb prison camp.

Japan made little pretense of giving humane treatment to its estimated 66,400 Allied military and civilian prisoners. Only three of the eight Doolittle fliers forced down over Japan survived. On a prison ship making the short cruise from Formosa to Japan, 1,000 out of 1,200 Americans died. Red Cross packages sent to relieve the prisoners were consumed by the Japanese. Only when the Allied victory seemed certain did the Japanese give a few necessities to prisoners.

PROPAGANDA. Throughout the second World War, nations fought a war of words on a scale never before approached. They fought it by radio, in newspapers, and in motion pictures. They dropped propaganda leaflets from planes and fired them from guns in "propaganda shells."

This "psychological warfare" had many objectives. Every nation sought to maintain morale at home. The Allies worked to maintain the morale of the citizens in countries overrun by Germany. Britain and the United States dropped tons of leaflets over these countries. British radio beamed a steady flow of news, advice, and encouragement at Europe.

Sympathy and support in neutral countries was a prime objective. In 1941 Germany's Propaganda Ministry under Goebbels had 40,000 agents and 300

newspapers in other countries. The United States had a Coördinator of Inter-American Affairs and an overseas branch of the Office of War Information to foster good will and knowledge of the American way of life.

Radio was a major weapon in direct propaganda fighting with the enemy. From Germany William Joyce (Lord Haw Haw) and John Amery taunted Britons and boasted of German successes. In Japan "Tokyo Rose" broadcast American music and told Americans in the Pacific they were forgotten men. The United States carried propaganda into battle through the army's Psychological Warfare branch. Combat teams, moving forward in trucks equipped with printing and radio units, spread word of Allied success and urged surrender.

QUEZÓN, MANUEL. The living symbol of Philippine freedom during the Japanese occupation was Manuel Quezón, president-in-exile. "Don Manuel" left college in 1897 to join the revolt against the Spanish and later the American rulers of the islands. In 1934 he won a lifelong battle when the United States Congress passed an act promising the Philippines complete independence. Quezón was elected president in 1935. In March 1942 he left the Philippines at MacArthur's urging and established headquarters in Washington, D. C. He died there in 1944 of tuberculosis.

Born 1878, Luzon. Member Philippine Assembly, 1906–09. Resident commissioner, United States, 1909–16. President Philippine Senate, 1916–35.

QUISLING, VIDKUN. Head of Norway's Nazi party, Quisling proclaimed himself premier the day the Germans marched into Oslo, and made his name "Quisling" a synonym for "traitor" the world over. Within a week Reich Commissioner Josef Terboven, trying to conciliate the Norwegians, ousted him. But Terboven failed to secure the coöperation of responsible leaders, and in September he named Quisling political leader of Norway. On Sept. 25, 1940, the Germans installed him as premier. After the Allies freed Norway, a jury found Quisling guilty of treason. He was executed Oct. 24, 1945.

Born 1887, Telemark province. Entered army, 1905. Military attaché at Leningrad, 1918–19; Helsinki, 1919–21. War minister, 1931–33. In 1933 founded *Nasjonal Samling*, a political party along Nazi lines.

RADAR AND RADIO. The most astonishing secret weapon of the war was the atomic bomb. But next to it in importance was Allied development of radio.

RADIO AND RADAR WORK THEIR WONDERS FOR AMERICAN FIGHTERS

1. This setup on a half-track truck serves an army field headquarters. 2. Artillery observers spot the fall of their shells, and a radio man (left) gives reports over a "walkie talkie," or one-hand portable transmitter and receiver. 3. A radar installation on an Italian hillside is ready to track enemy aircraft. 4. In a naval "plot room," officers follow radar indications to keep track of aircraft and ships, both enemy and friendly, in a sector of the China Sea.

Types of equipment ranged from huge installations for intercontinental communication down to sets which a man could hold in one hand. Ground troops could talk across 5 miles with pack sets called "walkie-talkies." These weighed 35 pounds. A smaller "handy talkie" weighed only 5 pounds and had a range of from 1½ to 5 miles. The midget of them all was a 5-tube set used in proximity fuses. It weighed only a few ounces.

"Intercom" sets were used to connect different locations in large airplanes and for communication between airplanes and tanks in formation. Life rafts carried a small set which sent an SOS signal for 500 miles when a hand crank was turned.

Development of Radar

The most amazing development was radar, or use of microwave radio for locating enemy targets. Microwaves are from six meters to one centimeter long; the frequencies are from 50 million to 30 billion a second (50 to 30,000 megacycles). Such short waves reflect sharply from solid objects, especially metal; and the reflections or echoes can be used to tell the range or give images of airplanes, ships, coastlines, and cities.

Range finding uses the fact that radio waves always travel 186,000 miles a second. If an echo is received in 1/3000th of a second, the wave must have traveled 62 miles. The range is one-half of this, or 31 miles.

The waves are sent in bursts, spaced far enough apart to permit reception of echoes from one burst before the next one goes out. Meanwhile, in the detecting device, a beam of electrons is kept sweeping across the fluorescent screen of an oscilloscope at a suitable speed. In a 50-mile instrument, for example, the beam would sweep the screen in about 1/3720th of a second. As long as it does this undisturbed, it causes a line of light straight across the fluorescent screen.

But suppose echoes are received 1/3000th of a second after each burst of waves goes out. The echoes are applied in a device which deflects the electron beam. This causes a "pip" in the line of light on the screen, at a point about 30/37ths of the way across the screen. This corresponds to a range of 31 miles.

Finally, the beam is swept across the region to be searched for enemy craft, by rotating the antenna of the apparatus. Whenever a pip appears on the screen, the direction from which it comes can be noted. This type of detector is called an A 'scope.

British radar of this type helped greatly in repelling the Nazi air attack upon Britain in 1940–41. When the United States began intensive preparation for war, American and British knowledge was pooled, and the improvement of radar was entrusted to a few institutions, particularly the Radiation Laboratory at Massachusetts Institute of Technology.

Among the many advances which followed was scanning, or forming visible images of objects in a field. This is done by arranging the outgoing beam of wave bursts to sweep many times a second over every portion of the field. At the same time, the line of light in the detecting oscilloscope swept correspondingly over its field. Then the echoes from every reflecting object on the field cause corresponding spots of light on the screen, and the spots blend to build up images of the objects, such as airplanes in a formation, or ships in a fleet or convoy. Arrangements of this sort are called B or J 'scopes, or PPI (Position-Plan-Indicator). The method was used on night fighter airplanes to detect enemy aircraft, and to provide bomb sights for use at night or in cloudy weather. Other adaptations enabled ground stations to guide friendly aircraft to their objectives and home, and to aid them in making landings. A special adaptation of radar principles for long-range aid to navigators is called *loran*.

Raw materials. The United States entered the war reasonably well supplied with most of the raw materials it would need to fight on a global scale. Critical shortages existed in certain minerals and in rubber. But chemists and manufacturers together had good prospects for providing enough synthetic rubber, and geologists could find new sources of rare minerals. (*See also* Critical Materials; Science in War.)

But success in meeting needs required organization to assure efficient production, transportation, and use of all raw materials. The government provided this through several agencies. The War Manpower Commission and Selective Service between them dealt with the manpower needs of the farms, mines, forests, and oil fields. The Office of Defense Transportation supervised the movement of raw materials from the sources to the points of use. The War Production Board allocated the materials for use at the times needed to meet the constantly changing demands of the armed forces.

Every year of the war, the nation drew more from the mines and the soil than it ever had before. In the peak year, 1944, it produced 683,700,000 short tons of coal, 1,675,000,000 barrels of oil, 12,230,000 bales of cotton, 1,072,177,000 bushels of wheat, 24,587,000,000 pounds of meat, 105,410,000 short tons of iron ore, and 34,000,000,000 board feet of lumber.

New war uses skyrocketed the production of certain metals. Magnesium, derived from sea water, inland salt brine deposits, and the mineral dolomite had been produced in experimental quantities before the war. Demand for it in airplane parts and incendiary bombs drove production up to 183,000 tons in 1943. This provided a sufficient stockpile, and production tapered off.

Of the metals essential to the manufacture of alloy steels, only molybdenum existed in sufficient quantity in the United States. In 1943, the peak year, 30,850 short tons were produced, enough to permit a decrease in the following years of the war. The other alloy metals, nickel, chromite, manganese, tungsten, and vanadium were critically short in varying amounts throughout the war. Fortunately, Canada and Latin America were able to make up the United States deficits.

The vital elements sulphur, potassium, and phosphorus were abundant. Sulphur, the basic material of sulphuric acid, with its multitude of wartime uses (including the manufacture of smokeless powder) reached a record production in 1944 of 3,604,337 tons. The great potash beds in the United States continued as always to furnish in abundance the potassium compounds needed in the manufacture of gunpowder,

DONATING BLOOD AT A RED CROSS BLOOD BANK

Here a Red Cross volunteer inserts the needle into the vein of a blood donor while a nurse holds the container. During the war 13 million pints were donated. The plasma was removed for shipment to the wounded and ill at the front and in military and naval hospitals.

fertilizer, and soap. The 1944 potash production was 834,568 tons. Deposits in the Southern states yielded 6,014,363 tons of phosphate rock, from which the various phosphorus compounds are derived.

Two minerals, pitchblende and carnotite, provided the ores from which uranium 235 was extracted. Pitchblende is mined in some abundance in northwest Canada. Carnotite is found in Utah and Colorado, but production figures were withheld even after the war.

Red Cross. Peoples of the various nations maintain their own Red Cross societies to aid the stricken in war and disaster. The link between them is the International Red Cross Committee in Geneva, Switzerland. Through this link citizens of belligerent countries may communicate with people in enemy lands. This committee also inspects war prison camps. In the second World War it distributed millions of food parcels, packed by the national societies for their men in enemy prisons.

The American Red Cross reached its greatest size and widest service during this war. In a single year more than 3 million workers in the volunteer services of 3,757 chapters and 5,785 branches gave more than 210 million hours. Some 18 million boys and girls enrolled in the Junior Red Cross. Motor Corps volunteers made more than two million calls. Canteen Corps served some 31 million meals. Production workers prepared 972 million surgical dressings, 4½ million overseas kits, and 7 million garments. Nurse's Aides helped in crowded hospitals. Gray Ladies read to patients and performed other social services. Home service volunteers aided families of soldiers and sailors. In the course of the war 13 million donors gave blood at Red Cross "banks." The nursing service recruited thousands of nurses for the Army and Navy. Red Cross employees accompanied the armed forces to every war area. Field directors and staff aides helped service men and women with their problems. Medical workers and recreation aides served in military and naval hospitals. Red Cross girls drove refreshment "clubmobiles" into danger areas. Recreation clubs, rest camps, and leave hostels cheered soldiers and sailors. Red Cross foreign relief aided millions of war victims. Public donations support the society's work. Nearly $225,000,000 was given in 1945.

Ribbentrop, Joachim von. By his wily negotiations with the German government and the bankers, von Ribbentrop helped Hitler into power. As Hitler's ambassador at large he negotiated the anti-Comintern pact. Hitler appointed him foreign minister shortly before the Germans marched into Austria. He advised Hitler at Munich in September 1938 and reached the high point in his career by successfully negotiating

A HOT SNACK FOR SOLDIERS OVERSEAS

This Red Cross "clubmobile" girl is preparing hot food for resting troops. Seventy-four Red Cross workers died on duty and 186 received decorations of honor.

the Russo-German non-aggression pact of August 1939. When the war ended, he hoped that he could negotiate his way out of treatment as a war criminal; but the British captured him on June 15, 1945, and placed him on trial with other leading Nazis at Nuremberg.

Born 1893, Wesel. Educated at Imperial Lyceum, Metz, and Grenoble, France. Served in first World War. Married daughter of wealthy wine company owner. Ambassador to England, 1936–38.

Rockets. The American national anthem tells us of the "rocket's red glare" and "bombs bursting in air," in the War of 1812. These rockets were British military ones called "Congreve" rockets. They carried an explosive charge in the head, and they were used until rifled artillery made them obsolete.

Rockets came back into use in the second World War as an inexpensive way to lay barrages and deliver widespread bombardment. Standard American rockets weighed from 3 to 1,200 pounds and had a range of from 40 to 10,000 yards. The explosive charge is an eighth or less of the total weight.

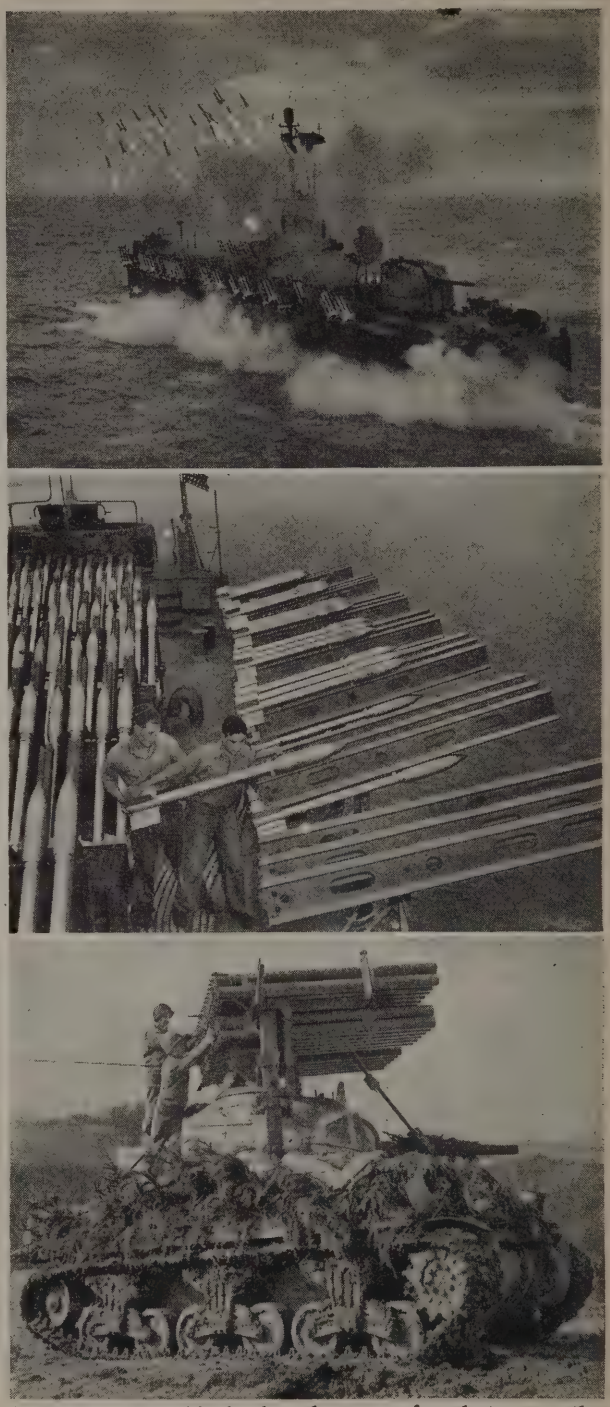
Rommel, Field Marshal General Erwin. No other German general stirred the imagination of his enemies as did the "desert fox" who almost conquered Egypt with his mechanized *Afrika Korps*. At his beck, ungainly tanks struck, withdrew, and struck again like packs of wild animals. Three times he hurled back the British 8th Army. By July 1942 he had swept to El Alamein—within 70 miles of Alexandria. But he had the weakness of repeating his tactics—anchoring a strong flank on the seacoast and sweeping his tanks around the desert flank. He lost the battle of El Alamein in October 1942 because Montgomery was prepared for these tactics and defeated them.

In March 1943, after retreating into Tunisia, he was ordered back to Germany "to restore his health." Later that year, he was given command of all German forces in Italy, and in December was transferred to France as ground commander of anti-invasion forces. He was supposedly injured by Allied strafing planes, July 17, 1944, while serving as commander of an army group near Caen. He died in October at a hospital in Ulm.

Born 1891, Heidenheim, Württemberg. Entered German army, 1910. Commanded troops in France and Italy, first World War (became captain). After Hitler's rise, taught at Potsdam War College. In 1936, began toughening future *Afrika Korps* in artificial sandstorms on beaches of Baltic. Served as Hitler's personal commander during marches on Vienna, Prague, Warsaw. In 1940, commanded tank divisions in France and Belgium. Led *Afrika Korps* into Libya, 1941.

Rumania. From 1920 until 1930 Rumania was one of France's chief allies. Then the world depression drove Rumania into Germany's economic barter bloc. After Hitler came to power he supported the rise of Rumania's Fascist "Iron Guard." This prepared the way for German domination in 1940, when Rumania was forced to cede land to Russia, Hungary, and Bulgaria. King Carol was compelled to abdicate. His son, Michael V, at 18, succeeded him. In 1941 Germany virtually occupied Rumania, and forced it to join the war against Russia.

ROCKETS ADD FIREPOWER TO THE ATTACK



A Navy rocket ship hurls a barrage of rockets over the horizon (top). Men are loading the ship's rocket-launching devices (middle). We see an Army tank equipped as a rocket launcher (bottom).

Rumania suffered huge losses. In 1943 American bombers began ruinous raids on the rich Ploesti oil fields. In 1944 a swift Russian drive overwhelmed the German and Rumanian defenses. King Michael arrested his cabinet and surrendered to the Allies, August 24.

The armistice terms returned northern Transylvania to Rumania, but gave Bessarabia and northern Bucovina to Russia. Rumania then set up a government which retained Michael but was dominated by Communists. Heavy damage to oil fields and wheat lands, and Russia's efforts to gain control of the Danube, made Rumania's reconstruction difficult.

RUNDSTEDT, KARL RUDOLF GERD VON. Self-contained and cold, Field Marshal von Rundstedt was one of the few *Junker* generals who survived Hitler's army purges. He was in and out of favor, but Hitler turned to him when he needed a general of the highest caliber. He commanded the southern armies in the invasion of Poland, led the attack upon France from the Ardennes, and conducted the German drive into southern Russia. He commanded the German anti-invasion forces May-July 1944 and was recalled to conduct the December counterattack. After this failed he retired. United States forces captured him at his home May 2, 1945.

Born 1875, Aschersleben. Family one of oldest and most aristocratic in Prussia. Attended Cadet School of War Academy. Chief of staff, 15th Army Corps, 1914–18.

RUSSIA. In the first World War Germany inflicted an overwhelming defeat on Russia. Before the war ended, the empire of the czars was in the throes of revolution. Communists seized the government, took over farms, mines, and factories, and set up a socialistic state—the Union of Soviet Socialist Republics (U.S.S.R.). Joseph Stalin became dictator in 1924 and set about to industrialize the country by a series of five-year plans.

But in 1933 Hitler obtained full dictatorial power in Germany and loudly proclaimed his intention of destroying the Soviet Union. Russia began feverishly to build up armament; and the apparent rivalry continued until the two leaders stunned the world by concluding a nonaggression pact (Aug. 23, 1939). Thereupon Hitler attacked Poland and launched the second World War.

Russia and Germany divided Poland between them and Russia occupied the Baltic republics. Russia then demanded territories from Finland, claiming that they were vital for the defense of Leningrad. Finland refused, and Russia enforced its demands in three months of war, ending March 12, 1940. From Rumania, Russia took Bessarabia and part of Bucovina.

Hitler kept his pact with Russia until he had conquered western Europe and reduced the small countries in the east to vassal states. Then without warning, on June 22, 1941, he launched an attack on the Soviet Union. Russia's Red army fought desperately and skillfully, organizing a "defense in depth." Nevertheless, the Nazis advanced rapidly across the vast Russian plains. In September they entered Kiev, capital of the Ukraine. In October they took Odessa and Kharkov and stood within 30 miles of Moscow. On November 22 they entered Rostov, key to the oil of the Caucasus. Then bitter winter weather came to Russia's aid. The Red army recaptured Rostov and started driving the Germans back from the vicinity of Moscow, almost to the day when the United States was brought into the war.

In the spring of 1942 the Nazis reopened their drive to the Caucasus. On July 1, after a 245-day siege, they entered the naval fortress of Sevastopol on the Crimean peninsula. In August they stood before Stalingrad on the Volga, determined to choke off the commerce of that great river. Here the Russians made a heroic stand, dying by thousands in the ruined city, until winter again gave them an advantage. Then they encircled and captured some 22 Nazi divisions. On Feb. 2, 1943, the battle ended in ruinous defeat for Germany.

Meanwhile Russia had worked feverishly to replace lost industrial centers with new facilities east of the Ural Mountains and throughout Siberia. Gradually these began turning out war materials in adequate supply. Also American lend-lease equipment and materials began pouring into Murmansk and across Iran in quantities which made American jeeps, trucks, and many other articles familiar throughout the Red army.

The gain in supply and the victory at Stalingrad enabled Russia to take the offensive along the entire front. By August 1943 the Red army had forced the Nazis back to the Dnieper River. In the winter they occupied Kiev and raised the long siege of Leningrad. In the spring of 1944 they drove the Nazis completely out of southern Russia and entered Rumania. In August they were in Hungary. In October they joined forces with Tito's Partisans in Belgrade, Yugoslavia. In January 1945, they took Warsaw, capital of Poland. On April 13 they captured Vienna, capital of Austria. Finally, on May 2, 1945, they took Berlin, after battling two weeks on streets, in buildings, and in subways. Russians and Americans had met at the Elbe River on April 25.

Until now, Russia had scrupulously observed a neutrality pact which had

A PLOESTI OIL REFINERY SET ABLAZE

The planes at the top of the picture were among the 162 Liberator B-24's that bombed Ploesti, Aug. 1, 1943. They flew a 2,400-mile round trip from Libya.

TACTICS OF TOTAL WAR LIFT RUSSIA FROM DEFEAT TO VICTORY

1. Russian men and women unload factory equipment brought from Leningrad to this town in the Urals. Removal of industry to the east as the Nazis advanced enabled Russia to maintain war production. 2. Citizens of Leningrad dig anti-tank ditches in 1941. Determined resistance held the Nazis at bay until the siege was broken in 1944. 3. Two tank factory workers climb from a cellar in bombed Stalingrad in 1942. The siege leveled the city, but Russian resistance cost Germany 330,000 men and broke Nazi offensive power. 4. These ranks of men suggest Russia's vast military reserves.

JOSEPH STALIN AND TWO NOTED AIDES

1. Joseph Stalin was never president of the Soviet Union, but he became dictator of it in 1924. He selected its wartime military leaders. 2. V. M. Molotov represented Russia abroad. 3. Marshal Georgi Zhukov defended Stalingrad and led the drive on Berlin.

been signed with Japan in April 1941. Now Russia denounced the pact, and on August 8 declared war, two days before Japan offered to surrender.

Russia emerged from the war the greatest military power on the continents of Europe and Asia. Far beyond the expanded borders of the Soviet Union the Red army maintained an "iron curtain" of censorship and prohibition of travel, especially across Europe from Stettin on the Baltic to the Adriatic. In relations with the Allies, Russia showed adamant insistence upon Russian policy in every particular. This attitude was interpreted variously. Some considered it the result of mere fear that the Western powers would renew prewar opposition to communism. Others saw a determination to pursue imperialist and communist expansion even to the point of war. (*See also* Peace, United Nations.)

RUSSIAN GUERRILLA FIGHTERS ATTACK A NAZI DETACHMENT

Thousands of sturdy peasants like these fought the Nazis behind the German lines. The man in the center, guarded by his comrades' submachine guns, is lobbing a hand grenade.

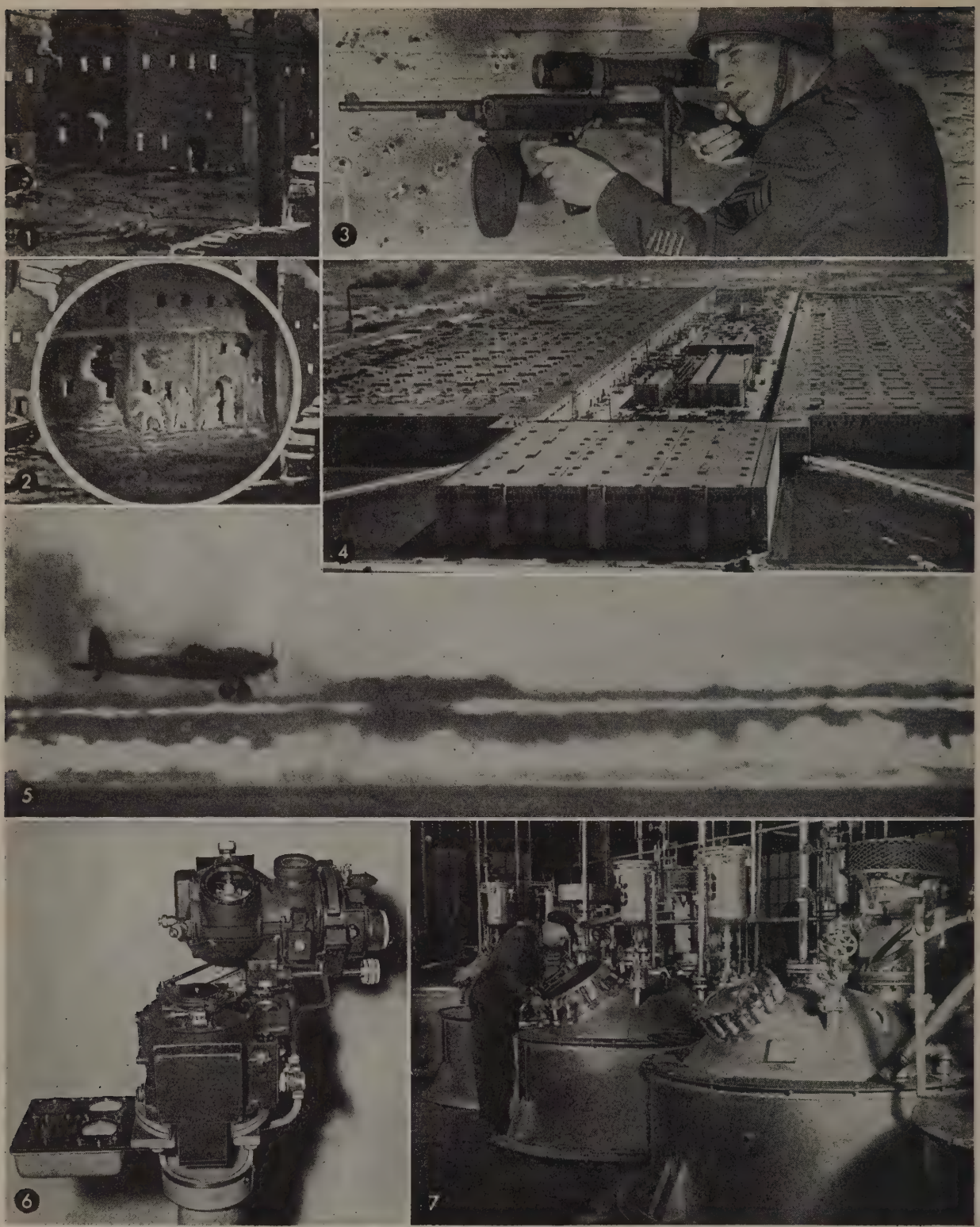
Sabotage. The act of sabotage is the malicious destruction or hampering of industrial production. The word is from the French name *sabot* for a wooden shoe, which a disgruntled worker might hurl into a machine to destroy it. In the second World War, the word implied an enemy-conceived or inspired act.

Sabotage was an essential part of "fifth-column" work. Germany prepared the way for its early invasions by establishing civilian saboteurs to disrupt the invaded country's key industries and communications. Enemy saboteurs never affected American war industries. At the outbreak of war, the FBI immediately arrested all enemy aliens and known Axis sympathizers. A few Nazi saboteurs who landed thereafter on American coasts were captured immediately.

Science in war. When the United States was plunged into war, it had no good airplane armor and no self-sealing fuel tanks. The Japanese seizure of the East Indies abruptly cut off its rubber supply. Countless problems like these demanded solution by American science. In the universities, in industry, and in military proving grounds, scientists met immediately pressing needs and went on to new inventions and discoveries.

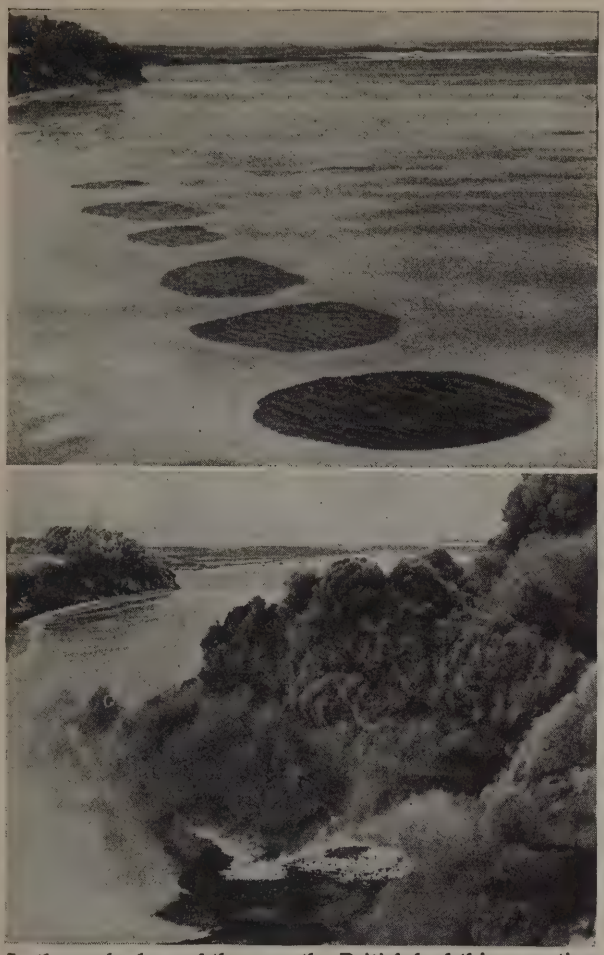
In this they were aided by a highly enlightened attitude on the part of the government and the armed forces. In earlier wars, military officials had shown a strong tendency to tell scientists what they wanted, without paying too much attention to suggestions that other ways might be better, or to original ideas from scientific sources. In this war, scientists were "given their head," both to meet needs as they thought best and to develop their own ideas.

To make this policy effective, an Office of Scientific Research and Development was organized to mobilize American scientists. Headed by Dr. Vannevar Bush, the agency mustered more than 6,000 scientists and placed $500,000,000 worth of contracts, principally to develop new weapons. The agency's greatest single project was the atomic bomb.



By throwing an infrared ray on night-shrouded objects (1), details were brought out as though by daylight (2). This magic was applied in the "sniperscope" shown here (3) mounted on a soldier's carbine. 4. The Clinton Engineering Works at Oak Ridge, Tenn., where much of the work of producing the atom bomb was done. 5. The British dispersed fog over airfields by edging the runways with blazing petroleum. 6. The famed Norden bombsight, responsible for the precision bombing by U. S. fliers. 7. Vats for making synthetic rubber from fats and butadiene gas.

FLAMING BARRIER TO INVADERS



In the early days of the war, the British had this reception ready for a German invasion. Underwater pipe lines would release blobs of oil on the sea (upper picture), and an incendiary device would fire them (lower picture).

It sponsored the early work on uranium fission that laid the foundations for the production and use of the bomb.

Complete coöperation with Great Britain, through the British Central Scientific Office, was part of the agency's work. This sharing of scientific knowledge led to at least one of the war's great developments—radar. Penicillin production grew from plans made by the O.S.R.D.'s Committee on Medical Research and the British Medical Research Council.

An interesting aspect of science in the war was the adaptation of known physical principles to new war machines and methods. Employing the rocket principle, scientists perfected the bazooka gun, the jet-propelled airplane, and the rocket projectile. Working with the gyroscope principle, they developed the Norden bombsight. They used infrared rays in the "sniperscope" (*see* picture, page 104) and the "snooperscope"—an adaptation of the former attached to a soldier's helmet.

The demand for more effective communication, control, and search instruments stimulated the electronics industry. Besides radar and new types of radio, research in electronics produced the VT fuse, the robot airplane, sonar, and loran (*lo*ng-*ra*nge *n*avigation).

The chemists created more powerful explosives by developing RDX and pentolite, and produced jellied gasoline as fuel for incendiary bombs and flame throwers. They improved the sulfa compounds, and developed atabrine, a synthetic drug to fight malaria. Another triumph was the large-scale production of penicillin.

Science gave the soldier concentrated and enriched battle rations. He was given a variety of battle dresses to suit the climate and terrain of the various theaters. Because of the improved food, dress, and medication, the death rate for all diseases in the Army fell from 14.1 per thousand in the first World War to 0.6 per thousand in the second.

SEABEES. To carry out in remote places the tremendous variety of wartime engineering jobs, the American Navy organized the U. S. Naval Construction Battalion. The members were called "Seabees." It was made up of carpenters, mechanics, electricians, bridge

NAVY BUILDERS FOLLOW INVADERS

On Attu, Seabee bulldozer drivers push a ramp into icy North Pacific waters (top). The Seabees work knee-deep in New Guinea mud to build docks (bottom).

LIFEBOAT DRILL ON A TROOPSHIP

Soldiers throng the decks of the *Queen Mary* to find assigned places on lifeboats and rafts. This huge vessel is carrying thousands of troops to European battlefronts.

builders, railroad men, and other skilled workers, under the overall command of Vice-Admiral Ben Moreell of the Bureau of Yards and Docks. "Can do" was their motto. Equipped with bulldozers and machine tools whenever possible, or working in an emergency with only scrap materials plus ingenuity, the Seabees soon had an international reputation for performing miracles. Of the 234,000 men in the battalion three-fourths were overseas by the end of 1944. They built everything from big naval bases and airfields to emergency water pumps.

SELECTIVE SERVICE. Eleven out of every twelve men who served in the armed forces were inducted through Selective Service. In all, local draft boards throughout the country registered more than 22 million men between 18 and 37 years of age. By Dec. 1, 1944, they had furnished 10,657,000 men out of a total of about 11½ million to the armed forces.

The Selective Training and Service Act became law on Sept. 16, 1940. The act authorized the formation of draft boards. It established four major classes: (1) men available for service; (2) men deferred because of essential occupation; (3) men deferred because of dependents; (4) men unfit for service. Each local board listed its registered men by number; a national drawing of numbers, lottery fashion, determined the order in which the men would be called. As each man's turn came, his draft board sent him to an induction center.

After the war, the draft boards remained in existence to help returning veterans in getting old jobs back.

SHIPPING. The outbreak of global war created a tremendous demand for shipping. To move an armored division to Europe, 15 Liberty ships were needed for the vehicles, equipment, and supplies. In addition, troopships were needed for the men (*see* Supply).

All this demand was met despite heavy losses inflicted by Axis submarines and aircraft. The attacks cost the United States 538 ships (3,310,000 gross tons); Great Britain, 2,570 ships (11,380,000 gross tons); other Allies, 1,172 ships (5,030,000 gross tons); and neutral countries, 490 ships (1,420,000 gross tons). From March to July 1942 the Axis sank 204 merchant ships, more than one a day.

To offset these losses and to build a fleet that would carry men and supplies to victory, American shipbuilders turned to mass production. They built about 2,700 prefabricated Liberty ships to make good American losses on the seas, and expanded the American tanker fleet to 11 million tons. The leading builder was Henry Kaiser. In November 1943, Kaiser's Vancouver yard assembled and launched a 10,500-ton Liberty ship in 3 days, 23 hours, and 40 minutes. After the first emergency had been met with the Liberty ships, the builders turned to Victory ships. These were well-constructed 17-knot vessels which could operate in postwar competition.

Two government bureaus, the U. S. Maritime Commission and the War Shipping Administration, conducted the American shipping effort. The first agency sponsored construction of merchant vessels. The second agency supervised operation of 4,500 ships by 130 American steamship companies, and the training of merchant seamen and officers (*see* Merchant Marine).

A TANKER TAKES OIL ABOARD

An American tanker receives oil at a gulf coast marine terminal. Tankers like these carried fuel for air, land, and sea craft all over the world.

For protection against Axis attacks, ships of all Allied flags sailed together in convoys. Cargoes and destinations were assigned by central Allied authority. The United Maritime Authority was organized in 1944. Eighteen nations participated, forming a giant fleet of 9,500 ships.

Convoy routes spread fanwise from American ports over both oceans. From New York, convoys sailed to Liverpool, 3,183 nautical miles; to Archangel, 4,830 miles; to Bombay, 8,182 miles. From San Francisco convoys sailed to Pearl Harbor, 2,091 miles; to Sydney, by way of the Society Islands, 6,971 miles; and toward the end to Guam, 5,428 miles. These routes were lengthened at times by hundreds of miles to avoid submarine and air attack (*see* Convoy; Submarine).

The United States entered the war as a second-rate maritime power. At the end of the war it had the largest merchant fleet in the world. The fleet had grown from 11 million deadweight tons in January 1942 to nearly 60 million tons in 1945, despite substantial losses incurred in the Atlantic and the Pacific. Great Britain, the only other warring nation to build merchant ships in any quantity, lost 13 million tons, but could replace only 6 million tons by building 1,300 ships.

Simpson, Lieutenant General William Hood. Simpson led America's 9th Army into Brittany in September 1944. This army took Brest. It then cut across France and Belgium to a position north of Aachen. In the November offensive it fought through mud, snow, and fierce resistance to the Roer. Simpson, tough and thin, was in the field with his men throughout this grim, relentless advance. His army crossed the Roer February 23 and the Rhine March 24. Then it swept across Germany to the Elbe.

Born 1888, in Weatherford, Tex. Educated at West Point. With War Department General Staff, 1928–32. Commander, 12th Army Corps, 1942–43; commander 4th Army, (9th in France), September 1943.

Smith, Lieutenant General Walter Bedell. As a staff officer, Smith helped plan the Allied invasion of Europe. In February 1942 he became secretary to the combined chiefs of staff. Six months later, Eisenhower received command of United States forces in the European theater and chose Smith to be his chief of staff. Smith served in this capacity during the campaigns of North Africa, Sicily, and Italy, and during the invasion of Europe. In 1946 he was named ambassador to the Soviet Union.

Born 1895, Indianapolis, Ind. Entered the regular army by way of National Guard and a commission in the first World War. He was a colonel and secretary to the general staff when the United States entered the second World War.

Smoke screen. Smoke and chemical fog may conceal land positions or ships from air bombing or artillery fire; or they may screen attacking forces. "Smoke screens" are generated with smoke pots; smoke bombs, shells, and grenades; by spraying from airplanes; and by mechanical smoke generators. Among the chemicals used are white phosphorus, hexachloroethane mixed with zinc dust, sulphur trioxide, and steam mixed with oil spray.

At the top, chemical warfare men line up smoke pots along a beach to conceal a landing party from enemy artillery spotters. At the bottom, a chemical smoke generator pours out clouds of nonpoisonous smoke. Men move easily, but with limited vision, in this smoke.

Smuts, Jan Christiaan. The Union of South Africa followed Britain into war as a result of urging by its liberal statesman and wartime prime minister, Jan Christiaan Smuts. Smuts then used his influence to maintain unity in the British Commonwealth of Nations. When the Allies were still fighting a defensive war, he urged aggression. As a field marshal, he sat in

SMOKE HIDES TROOP MOVEMENTS

Allied war councils. In 1945, at San Francisco, he helped write the preamble to the United Nations Charter.

Born 1870, Cape Colony. Educated at Victoria College and Cambridge. General in Boer War on side of Boers. Helped to form Union of South Africa; prime minister, 1919–24. Delegate to Paris Peace Conference, 1919; helped frame the Covenant of the League of Nations.

Somervell, Lieutenant General Brehon Burke. The gigantic task of feeding, clothing, sheltering, and equipping the United States Army fell to Lieutenant General Somervell, chief of the Army Service Forces. After varied experiences as an army engineer, Somervell served as WPA administrator for New York City, 1936–40. Then he returned to army duty as chief of the construction division, Quartermaster Corps. He became commanding general, Army Service Forces, in March 1942.

Born 1892, Little Rock, Ark. Educated at West Point. With 15th Engineers, France, in first World War. District engineer, Washington, D.C., 1926–30;

Memphis, Tenn., 1931–33. Collaborated in economic survey of Turkey, 1933–34. Engineer, Florida Ship Canal, 1935–36.

SOUTH AFRICA, UNION OF. After the first World War, nationalist feeling rose high in the Union of South Africa. At the outbreak of the second World War, Gen. James Hertzog, as premier, refused to aid Britain by declaring war on Germany. Another former Boer general and former premier, Jan C. Smuts, called for a ballot in Parliament. It voted 80 to 67 to enter the war, and Smuts again became premier. South African troops fought in Ethiopia, Libya, Egypt, Italy, and the Far East.

SPAATZ, LIEUTENANT GENERAL CARL A. Directing precision bombing to smash enemy industry was Spaatz's big war job. In January 1944 he became commanding general of United States strategic bombing forces with headquarters in England. That February his heavy bombers began their devastating daylight raids deep into Germany. Two months after V-E Day he became chief of the growing force of B-29's which was leveling Japanese cities. In January 1946, he succeeded General Arnold as chief of the Army Air Forces.

Born 1891, Boyertown, Pa. Educated at West Point. In first World War, commanded pilot training field in France; between wars, organized air maneuvers and tests. Named chief of Army Air Forces Combat Command in 1942 and of N.W. Africa Air Forces in 1943.

SPAIN. When civil war broke out in Spain July 17, 1936, both Germany and Italy sent armed forces to aid the Fascist rebels led by Gen. Francisco Franco, while Russia aided the Loyalist government forces. In that conflict of 32 months the Axis introduced mechanized warfare, tested armament, and developed air power into a new battle arm. This Axis aid enabled Franco to win the war March 28, 1939. But the conflict had exhausted Spain. When the second World War broke out Sept. 3, 1939, Franco and his shattered nation were in no position to give active aid to his former allies of the Axis. Spain therefore declared its neutrality, as it had at the outbreak of the first World War in 1914.

In the second World War, however, Spain's neutrality was false. In 1940 Spain occupied and annexed the "international zone" of Tangier, and withdrew only when pressed by the victorious Allies in 1945. Throughout the war Spain exacted economic concessions from the Allies as its price of remaining a nonbelligerent. Meanwhile it harbored Axis agents, and increased its output of mercury and tungsten for the Axis. In reply, the Allies banned Spain from the United Nations in 1945. In 1946, at the insistence of France, Russia, and Poland, the United Nations set up a committee to weigh Franco's fascist régime as "a menace to world peace."

SPARS. *See* Women's Service.

SPRUANCE, ADMIRAL RAYMOND AMES. Spruance directed many of the United States attacks across the Pacific toward Japan. As a rear admiral he led a task force in the battle of Midway. As a vice-admiral and commander of the Central Pacific area he directed the invasion of the Gilberts and Marshalls. As a full admiral in command of the 5th Fleet he directed the attack on Saipan and the reconquest of Guam. Units of his fleet pounded Iwo and Okinawa prior to invasion.

Born 1886, Baltimore, Md. Educated at Annapolis. Served in Bureau of Engineering, Naval Intelligence, and Naval War College. Commanded U.S.S. *Mississippi*, 1939–40. In command of Caribbean area, 1940–41.

STETTINIUS, EDWARD R., JR. When war came, Stettinius turned from "big business" to serve the United States in high organization and diplomatic posts. In 1940 he resigned as chairman of the board of U.S. Steel to become a member of the Advisory Committee to the Council of National Defense. In 1941 he directed the Priorities Division of OPM. Then he organized and administered lend-lease aid to the Allies in 1941–43. He succeeded Sumner Welles as undersecretary of state in 1943 and Cordell Hull as secretary of state in 1944. In June 1945, President Truman named him United States member of the Security Council of the United Nations.

Born 1900, Chicago. Attended University of Virginia. Became assistant to vice-president, General Motors, 1926; vice-president, 1931. Went to U.S. Steel Corporation, 1934, as vice-chairman finance committee.

STILWELL, GENERAL JOSEPH W. In May 1942 "Uncle Joe" Stilwell led an army group out of fallen Burma into India. Two years later, as United States commander for China-Burma-India, he directed a campaign back into Burma. This re-established communication with China over a road from Ledo to the Burma Road. Stilwell had been chief of staff and adviser to Chiang Kai-shek since early in 1942. Because of disagreements between the two men, Stilwell was recalled to Washington in October 1944. He became commander of Army Ground Forces in January 1945 and of the 10th Army that June.

Born 1883, Palatka, Fla. Educated at West Point. Studied Chinese for many years. Served in Tientsin, 1926–29, and in Peiping, 1932–39. Became a 4-star general in 1944.

STIMSON, HENRY L. Although a lifelong Republican, Stimson served in the Roosevelt administration as secretary of war from July 1940, when the United States started to mobilize for war, until September 1945. He was eminently qualified for the post by previous service in two cabinet positions, as secretary of war under President Taft, 1911–13, and as secretary of state under President Hoover, 1929–33. In 1931, as secretary of state, he refused to recognize the Japanese occupation of Chinese Manchuria.

Born 1867, New York City. Educated at Yale and at Harvard Law School. At 30 became law partner of Elihu Root. Appointed governor general of Philippines by President Coolidge, serving from 1927 to 1929.

SUBMARINE. In the second World War, both Germany and the United States struck devastating blows with submarines.

To cut off Japan from its rich conquests in the East Indies, American submarines warred relentlessly upon Japanese shipping. In all, they sank 1,944 major vessels, including 194 warships. Of more than 200 American submarines in action, 52 were lost. But the force eliminated some 276,000 Japanese, more than five times the

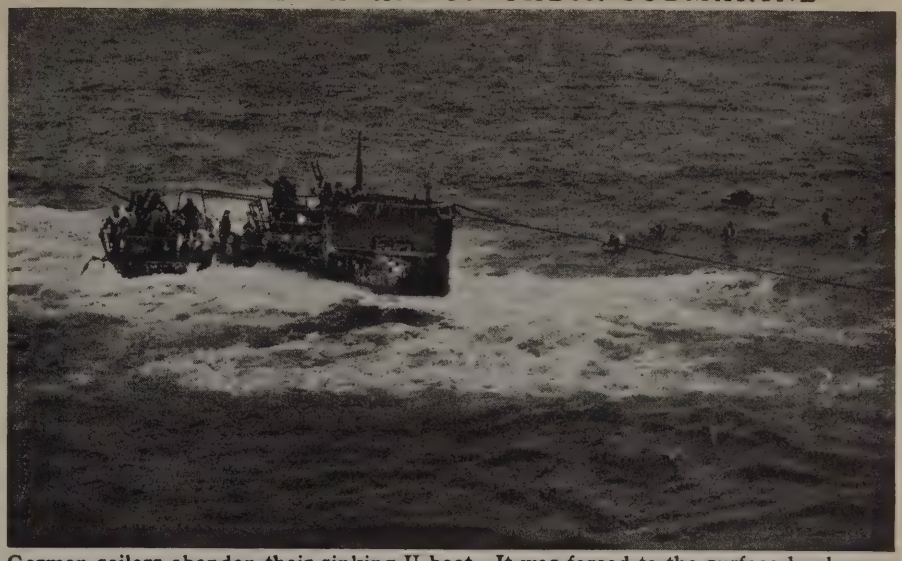
number of men in the American submarine service, and seriously crippled Japanese merchant shipping.

For their part, the Japanese used suicide submarines at Pearl Harbor and standard seagoing types in the early South Pacific sea battles. But they did not achieve a worth-while success until the war was nearly over. Then on July 29, 1945, a Japanese submarine sank the American cruiser *Indianapolis*, bringing death to 880 men.

The German effort in the Atlantic employed about 1,200 *Unterseebooten* ("underwater boats"). The U-boats hunted in groups called "wolf packs," and until 1944 no Atlantic convoy was safe from them. Ships were sunk within sight of American seaports. Heavy loss of coastwise tankers compelled shipment of oil by rail from Texas to the eastern states.

The Germans made their attacks highly effective by developing many scientific aids, including radar, by using aircraft coöperation wherever possible, and by devising improvements in the submarines themselves. One type, the "Schnorkel," had a breather tube reaching to the surface. It could submerge with its Diesel engines running and cruise under water at 20 knots.

NAZI SEAMEN ABANDON THEIR SUBMARINE



German sailors abandon their sinking U-boat. It was forced to the surface by damage from depth charges which American destroyers had dropped.

The Allies met the German assault be patrolling sea-lanes with blimps and airplanes and by installing radar, sonar, and asdic detection on escort and patrol vessels. The last two send out beams of sound under water and detect any echoes caused by submarines. The time needed for the return and the angle from which it comes tell the location of the enemy craft. These defenses accounted for about 700 German submarines destroyed, and eventually brought the menace under control; but meanwhile the Germans had sunk 20,000,000 tons of Allied shipping.

AXIS SUBMARINES WERE DEADLY EFFICIENT SEA WEAPONS

A Japanese two-man submarine lies beached on Oahu after attacking Pearl Harbor (left). A U-boat returns to its pen in a German-occupied port. Notice the thickness of the bombproof concrete in comparison with the men (right).

Supply. The Allies won the war largely because they won the "battle of supply." They had to equip millions of men not only with food and clothing, but with scores of new weapons and newly invented items, such as metal landing fields, walkie-talkies, and atabrine. Merely to send a soldier from shipboard to battlefield required eight tons of shipping capacity. Then to stay at the front, each man needed another ton a month.

The supply line began on the home front—at the mine, farm, and factory. Thousands of essential workers were exempted from military service to produce vast quantities of matériel (*see* Home Front).

Altogether some 17½ million workers in American industry produced 136 billion dollars' worth of war supplies. Typical items during a three-year period were 187,000 airplanes, 1,800,000 trucks, 68,000 tanks, 2,800,000 big and medium guns, 15,000,000 machine guns and rifles, 43,000,000,000 rounds of ammunition, 43,400,000 bombs, 196,000,000 uniforms, and 98,000,000 pairs of shoes.

Cargo vessels sailed from American ports in 1944 at the rate of 1,400 every month—or one every 30 minutes. The Army alone shipped 126,859,000 tons of supplies during the war. To keep 500,000 men supplied with food and ammunition and replace damaged equipment, the Army had to ship 750,000 tons—or 68 Liberty-ship loads—a month. At the height of the campaign in France, Eisenhower stated: "We must have as replacement items each month 36,000 small arms, 700 mortars, 500 tanks, 2,400 vehicles, 100 field pieces. Consumption of artillery and mortar ammunition in northwestern Europe averages 8,000,000 rounds a month."

The United States sent 20 billion dollars in lend-lease goods to other Allied nations (*see* Lend-Lease). The convoy route to Murmansk, Russia, and the air route over the "hump" to China were two of the many dangerous routes used (*see* Burma Road). The Persian Gulf Command of the United States Army built docks, truck roads, and railways, and moved 4½ million long tons of war goods through Iran to Russia (*see* Iran-Iraq).

The whirlwind Allied advance through France in 1944 was sustained by swift supply. When the advance started, the United States Army established a swift truck service called the "Red Ball Express." Every day 9,000 trucks clipped along at 40 miles an hour from Cherbourg to the south and east for 700 miles, speeding supplies to the advanced dumps and depots. General Patton's armored drive across France received critically needed supplies, spare parts, and gasoline by air transport.

For supply at sea, the Navy introduced the "sea train." Tankers and supply ships were kept ready at all times immediately behind the fighting fleet to furnish fuel, ammunition, food, and equipment, to handle mail, and to remove the injured. Floating dry docks and repair ships waited in near-by safe anchorages to make good any damage which a ship's crew could not handle.

Sweden. As in the first World War, Sweden declared its neutrality at the outbreak of war in September 1939. Its sympathy lay largely with the Allies, but it strove to avoid any overt breach of neutrality. When Britain and France proposed to send armed aid to Finland in the Russo-Finnish war in December, Sweden refused permission to cross Swedish soil. Germany's conquest of Norway and further victories in 1940–42 cut Sweden off from the world and threatened the land with Nazi invasion. To hold Germany off, Sweden shipped it iron, steel, ball bearings, timber, and food. But Sweden protested German repression in occupied nations and took in thousands of refugees. In 1943 growing assurance of Allied victory led Sweden to decrease its supplies to Germany. Sweden did not join the United Nations.

Switzerland. "Armed neutrality" kept Switzerland out of the second World War. The well-armed Swiss declared they would resist invasion and destroy the strategic Alpine tunnels. The problems of an isolated

TANKS LED ACTION ON ALL FRONTS

The Nazis used this 45-ton "Panther" tank to defend the Siegfried Line (top). This Russian "KV" heavy tank fought the Nazi "Tiger" tank on the see-saw Eastern Front (middle). An American "General Sherman" tank stands before a battle-scarred French house (bottom).

neutral nation beset Switzerland throughout the war. The Allied blockade and the German counterblockade permitted, by certificate, only a trickle of imports—which normally furnished Switzerland with two-thirds of its supplies. Meanwhile each side accused the Swiss of aiding the other, and in 1945 the Allies forced Switzerland to stop trading with Germany. In 1943–45 bombs from both German and Allied planes struck Switzerland. The United States paid an indemnity of $1,000,000. After the war Switzerland faced the problem of regaining export trade and absorbing losses on credits to its former chief customer, Germany.

TANKS. The swift pace of the second World War demanded a tank that could lead an attack and keep up with motorized troops and weapons. Each nation tried to develop models that would have the most practical balance of mobility, firepower, and armor.

The M-4 or "General Sherman" was the most widely used Allied tank. Weighing 35 tons and armed with a 76-mm. gun or 105-mm. howitzer, it can speed along at 35 miles an hour. General Montgomery employed it to rout Rommel and his *Afrika Korps*. Patton used it to make his spectacular thrusts on the Western Front. It was criticized for many shortcomings, but superior numbers and skillful handling made it do for the job. More than 100,000 tanks of all types were produced in the United States from May 1940 to the end of 1944, when the demand for tanks began to diminish sharply.

Slower, but more heavily armored and gunned than the Sherman, were the German Panthers and Tigers. The Tiger weighed 75 tons, mounted an 88-mm. gun, and had a maximum speed of 23 miles an hour. To combat the Tiger in tank-to-tank battles the United States developed the M-26 or "General Pershing." It weighed 43 tons and had a powerful 90-mm. gun. Russia's anti-Tiger tank was the heavily armored "KV," with a 76-mm. gun.

New antitank weapons were developed by both sides: bazookas, land mines, and flame throwers. The M-10 tank destroyer, firing a 3-inch high-velocity shell, could pierce the heaviest armor. The Allies used flame-throwing and rocket-launching tanks. The "tank-dozer," an M-4 fitted with a 3½-ton bulldozer blade, made its appearance in Pacific amphibious operations.

TITO. From headquarters in a mountain cave the Communist leader of Yugoslavia, Marshal Tito, commanded highly effective guerrilla armies. Their harrying tactics pinned down at least 125,000 German troops. Tito's followers, known as Partisans, also accused their countrymen, General Mihailovich's Chetniks, of collaborating with the Nazis, and fought them as well as the Nazis. Late in the war, the Allies shifted their help from Mihailovich to Tito. After the Russians and Partisans together took Belgrade in October 1944, Tito established himself as premier and dictator of Yugoslavia.

Born 1890, near Zagreb, Croatia. Real name, Josip Broz. Son of a blacksmith. Served with Austrians in first World War. In 1917 joined Bolsheviks in Russia. Returned to Yugoslavia, 1924.

TOJO, HIDEKI. For many years Tojo was head of a war-minded clique of the Japanese army. He became premier in October 1941. Thereafter his diplomats negotiated with the United States while the Japanese made ready to attack Pearl Harbor, and he plunged his country into war December 7. By 1944 he was virtual dictator. But his downfall was swift. The loss of Saipan to an American attack forced resignation of his cabinet and drove him into retirement. In September 1945 he attempted suicide when United States Army officers arrested him as a war criminal.

Born 1884, Tokyo. Member of Samurai class. Educated at Imperial Military Academy and Military Staff College. In 1937 became lieutenant general and chief of staff of Japanese army in China.

TORPEDOES. War advances in torpedo design centered upon speed, power, and the elimination of tell-tale bubbles. Both the Allies and Germany devised electric-drive torpedoes that traveled 35 miles an hour and left no wake. The Germans also used an *acoustic* or *homing* torpedo. A sound-detecting mechanism guided it toward the threshing propellors of near-by ships.

Torpedo-carrying planes were extensively used by all sides. A Japanese "suicide" torpedo was guided to its

A NAVY "AVENGER" LAUNCHES TORPEDO

Flying directly toward the enemy ship, the Navy pilot sends a torpedo on a straight course to its target. Note the plane's open belly doors and the exhaust trailing from the torpedo. The torpedo's motor starts as soon as it leaves the plane.

mark by a man inside it. The British and Italians devised similar weapons, but provided for the pilot's escape before the explosion. The largest of all torpedoes was the Japanese Type No. 93. It was 30 feet long and carried 1,700 pounds of explosive.

TURKEY. On May 12, 1939, Turkey and Great Britain signed a pact pledging mutual aid if war should involve the Mediterranean area. Despite that treaty, Turkey maintained neutrality until 1945 by bargaining with both sides. Its power lay in its control of the Dardanelles, key to the sea route to Russia. The Montreaux Convention of 1936 empowered Turkey to close the straits to belligerent ships in wartime. When Turkey would seem ready to join one side in the war, the other side would grant economic concessions. The United States, for example, sent lend-lease goods. But in 1944 the Allies forced Turkey to break relations with Germany. In 1945 Turkey declared war on Germany and Japan in order to join the United Nations. But Turkey's power had waned, and in 1946 Russia sought control of the Dardanelles and presented some border claims to Turkey.

UNDERGROUND. As rapidly as Germany and Japan conquered a nation, patriotic citizens began to form secret, or "underground," groups to work against the conquerors. At first these were community units of four or five people who could trust one another. Then groups established coöperative networks that spread over the country. Gradually they received arms, radios, and other supplies and aid from Allied sources. Finally the underground was acting under orders from the Allied high command. Allied officers and technicians were serving with it, and guerrilla forces stood ready for the battle for liberation.

This dangerous patriotic action cost heavily in lives and suffering for the men and women engaged. Usually all who were detected by the enemy were tortured to force revelation of secrets. Execution followed, and terrible reprisals were taken against the offender's family.

RIDERS GUIDE TORPEDO TO TARGET

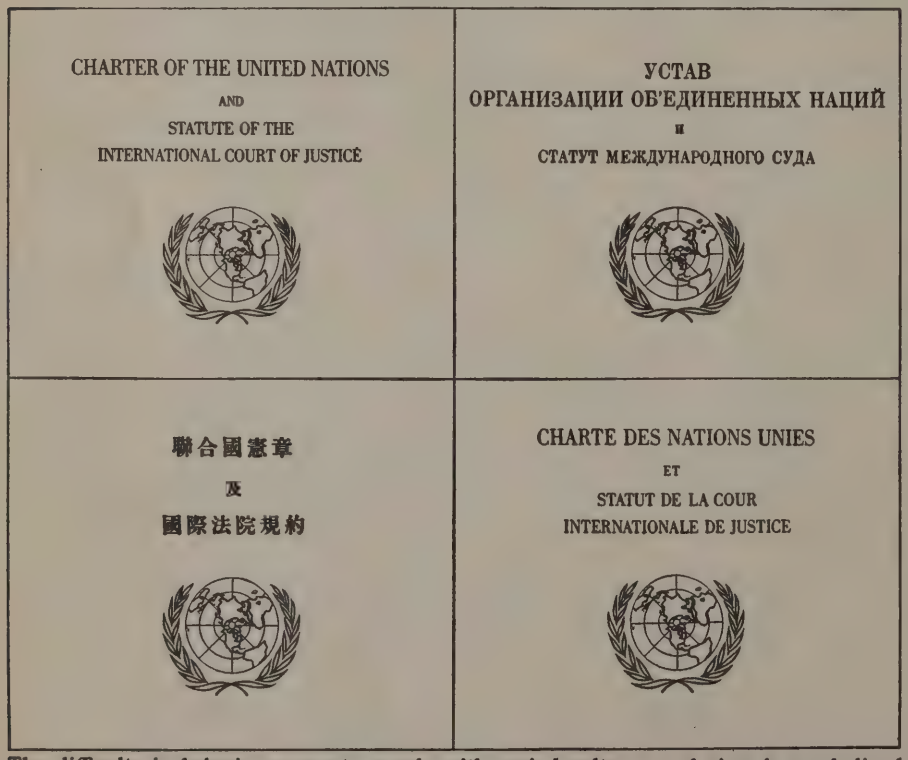
These two British sailors ride their "human" torpedo to the target ship, fix the explosive portion to the hull, set the time fuse, and escape on the electrically driven shell.

Underground activities included: (1) spying and reporting military information; (2) providing underground newspapers; (3) sabotaging industries and communications; (4) rescuing Allied fliers and smuggling them to safety; and (5) actual warfare. The last named ranged from killing a guard to extensive military operations.

The well-organized French *maquis* was the most powerful force. The Poles set up a complete "secret state."

UNITED NATIONS. Near the end of the second World War, world hopes for preserving peace centered in a new international organization, the United Nations. Representatives of Great Britain, Russia, China, and the United States drew up the first plan for this at the Dumbarton Oaks Conference held in Washington, D.C., during October 1944. Then 51 nations, meeting in San Francisco from April to June 1945, worked out a charter. The first meeting was held in London in January 1946. This meeting chose the United States for

ITS PURPOSE IN ANY LANGUAGE IS "PEACE"



The difficulty in bringing peace to people with varied cultures and aims is symbolized here. Notice that the United Nations Charter is printed in several "official" languages.

THE 51 UNITED NATIONS AND THE DATES WHEN THEY JOINED

Argentina	September 1945	
*Australia	January 1942	
*Belgium	January 1942	
Bolivia	April 1943	
Brazil	February 1943	
Byelorussian S.S.R.	*See* Russia	
*Canada	January 1942	
Chile	February 1945	
*China	January 1942	
Colombia	January 1944	
*Costa Rica	January 1942	
*Cuba	January 1942	
*Czechoslovakia	January 1942	
Denmark	June 1945	
*Dominican Republic	January 1942	
Ecuador	February 1945	
Egypt	February 1945	
*El Salvador	January 1942	
Ethiopia	October 1942	
France	January 1945	
*Great Britain	January 1942	
*Greece	January 1942	
*Guatemala	January 1942	
*Haiti	January 1942	
*Honduras	January 1942	
*India	January 1942	
Iran	September 1943	
Iraq	January 1943	
Lebanon	February 1945	
Liberia	January 1944	
*Luxemburg	January 1942	
Mexico	June 1942	
*Netherlands	January 1942	
*New Zealand	January 1942	
*Nicaragua	January 1942	
*Norway	January 1942	
*Panama	January 1942	
Paraguay	February 1945	
Peru	February 1945	
Philippines	June 1942	
*Poland	January 1942	
*Russia	January 1942	
Saudi Arabia	February 1945	
*South Africa	January 1942	
Syria	February 1945	
Turkey	February 1945	
Ukrainian S.S.R.	*See* Russia	
*United States	January 1942	
Uruguay	February 1945	
Venezuela	February 1945	
*Yugoslavia	January 1942	

*Original 26 nations.

ORGANIZATION OF THE UNITED NATIONS TO PRESERVE PEACE

GENERAL ASSEMBLY
51 charter-member nations; each member has one vote; may have up to five delegates. Elects some or all members of Security Council, Economic and Social Council, International Court. Discusses problems, makes recommendations to Security Council. First meeting, London, Jan. 10-Feb. 15, 1946.

SECURITY COUNCIL
5 permanent members, United States, Great Britain, Soviet Russia, China, France. Six others elected by General Assembly for 2-year terms. Adopts and prosecutes measures to preserve peace and suppress aggression. First meeting, London, Jan. 17-Feb. 16, 1946; second, New York, March 26, 1946.

TRUSTEESHIP COUNCIL
Members, United States, Great Britain, Soviet Russia, France, China, and others if they administer trust territory. General Assembly names an equal number of members not administering trust territory. Supervises administration of trust territories (colonies, mandated territory, etc.).

SECRETARIAT
Permanent staff under a Secretary General to serve General Assembly and Security Council; organization started in New York in 1946.

MILITARY STAFF COMMITTEE
Composed of chiefs of staff of United States, Great Britain, Soviet Russia, China, France. Arranges disposition of forces permanently assigned to Security Council.

INTERNATIONAL COURT OF JUSTICE
15 members selected for 9-year terms by concurrent action of General Assembly and Security Council. Decides disputes referred by member nations. Judges named Feb. 2, 1946.

PERMANENT AIRFORCE CONTINGENTS
Assigned in readiness for emergency action.

ECONOMIC AND SOCIAL COUNCIL
18 member states elected for 3-year terms by General Assembly. Seeks world-wide improvement of economic and social conditions; may establish commissions for particular problems. Coördinates activities of independent specialized agencies. First meeting, London, Jan. 23-Feb. 18, 1946; second, New York, May 25, 1946.

COMMISSIONS
Established by Economic and Social Council at its discretion.

COÖPERATING SPECIALIZED AGENCIES

INTERNATIONAL MONETARY FUND
Organized Savannah, Ga., March 8, 1946; uses capital of $7,300,000,000 to stabilize national currencies.

INTERNATIONAL BANK
Organized Savannah, Ga., March 8, 1946; uses capital of $7,600,000,000 for loans to aid productive enterprises.

INTERNATIONAL LABOR ORGANIZATION
Established by League of Nations; started independent operation in Montreal (1940). Promotes world-wide improvement of conditions and income for labor.

WORLD FOOD AND AGRICULTURE ORGANIZATION
Preliminary organization, Hot Springs, Va., May, 1943. Devises and recommends measures for obtaining adequate world-wide supply of food.

After firing ceased in 1945, the world's principal hope for maintaining peace rested with the agencies shown above. The governing organizations are the General Assembly and the Security Council. The others deal with special problems.

the permanent seat of the organization and elected Trygve Lie of Norway as secretary general.

The organization is headed by a General Assembly and a Security Council. These are aided by a Secretariat and the International Court of Justice. The Assembly also names an Economic and Social Council, and the Council arranges coöperative action with various independent organizations. It maintains commissions to deal with specific subjects. Among these is the United Nations Educational, Scientific, and Cultural Organization. This organization promotes world-wide cultural understandings and spreads knowledge. The Atomic Energy Commission deals with problems arising from the development of atomic energy.

UNRRA. The United Nations Relief and Rehabilitation Administration was formed Nov. 9, 1943, in Washington, D.C., when 44 nations pledged aid to war-torn countries. The first meeting was held in Atlantic City, November 10, with Herbert H. Lehman as director general. Fiorello H. LaGuardia succeeded him in 1946.

Aiming first to "help people to help themselves," UNRRA sent seeds, machines, and raw materials. It also provided food, clothes, and shelter. Member nations promised support in proportion to national incomes. The first budget was $1,866,000,000. Of this the United States share was 72 per cent, or $1,350,000,000.

By 1946 UNRRA had aided and repatriated about 5 million displaced persons in Allied Europe, and relief shipments totaled more than 6 million tons.

ENTERTAINING SERVICE MEN AT HOME AND ABROAD

Soldiers in New Guinea watch a USO road-show. The combined audience of these "foxhole circuit" shows amounted to more than the population of the United States (top). At home, service men enjoy a show at New York's Stage Door Canteen (bottom).

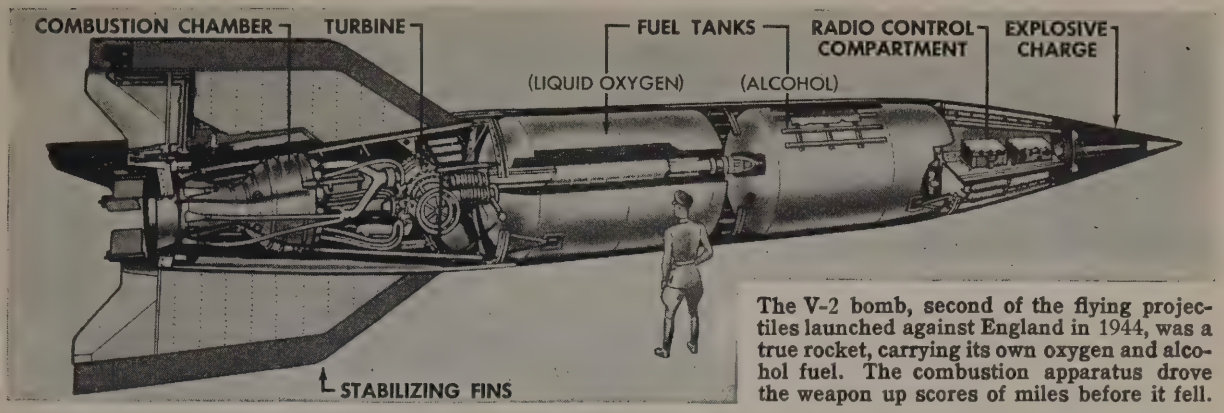
USO. Six American welfare associations formed the United Service Organizations in 1941 to furnish aid and recreation to the armed forces. Members were the Y.M.C.A., the Y.W.C.A., the National Catholic Community Service, the Salvation Army, the Jewish Welfare Board, and the Travelers' Aid Society.

They set up club houses and lounges in training centers where enlisted men could spend their leisure in a homelike atmosphere. Their Mobile and Maneuvers Service took recreation to outpost stations. The USO Camp Shows "foxhole circuit" carried famous stars and others to fighting men all around the world.

VANDEGRIFT, GENERAL ALEXANDER A. When the Marines landed on Guadalcanal in August 1942, their leader was Major General Vandegrift. Through bombing, bombardment, and counterattack, Vandegrift and his men clung to Guadalcanal. In December Army units relieved them. The next November Vandegrift, by then a lieutenant general, directed landings on Bougainville. The same month he succeeded General Holcomb as commandant of the Marine Corps.

Born 1887, Charlottesville, Va. Attended Basic School and Field Officers School

GIANT ROCKET BOMBS OPEN A NEW EPOCH IN WAR



The V-2 bomb, second of the flying projectiles launched against England in 1944, was a true rocket, carrying its own oxygen and alcohol fuel. The combustion apparatus drove the weapon up scores of miles before it fell.

of Marine Corps. Served in Nicaraguan campaign, 1912; occupation of Vera Cruz, 1914; Haiti, 1916–18, 1919–23.

V-BOMBS. In 1944 the Germans unleashed two surprise weapons called V-bombs. (The V is from the German *Vergeltungswaffen*, which means "vengeance weapon.")

One bomb, the V-1, was a robot plane loaded with explosive. It flew about 350 miles an hour by jet propulsion. From its sound in flight the British called it a *buzz bomb*. The second type, V-2, was a huge rocket about 50 feet long. Alcohol and liquid air drove it as high as 70 miles up into the air, and it fell at a speed as fast as a mile a second. Each type carried about a ton of explosive in its "war head."

V-MAIL. To help handle the tremendous volume of mail between the armed forces overseas and the people at home, the government established V-mail. Letters were written on one side of special 11 by 8½ inch-stationery. Technicians photographed them on 16-mm. film, 1,700 letters to a reel. In this form they could be shipped (usually by plane) in about a fiftieth of the space required by regular mail. After shipment, 4- by 5-inch enlargements were made for delivery both at home and overseas.

PROCESSING V-MAIL LETTERS

This army technician is developing and drying paper enlargements printed from rolls of V-mail microfilm. The next step is a "chopping machine" (not shown), which will cut the letters apart. A third machine will insert them into envelopes.

WAC. *See* Women's Service.

WAINWRIGHT, General Jonathan M. On May 6, 1942, it was the tragic duty of Lieutenant General Wainwright to surrender the exhausted American forces on Corregidor to the Japanese. He had succeeded to the Philippine command when MacArthur under orders left Bataan. For the next three years Wainwright endured semistarvation and brutality in Japanese prison camps. But on Sept. 2, 1945, as MacArthur's guest on the *Missouri*, he witnessed Japan's surrender. In the United States huge crowds welcomed him. He was promoted to the rank of general and awarded the Congressional Medal of Honor.

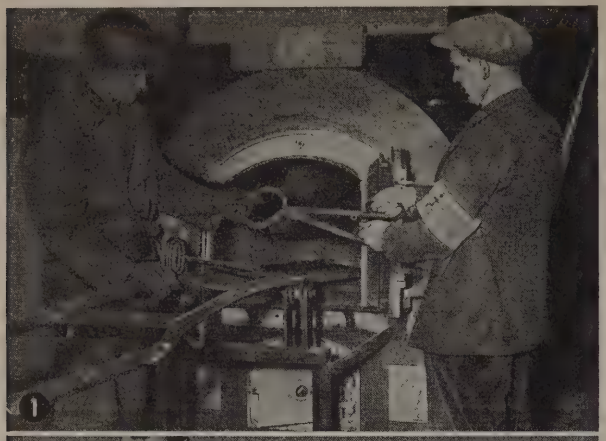
Born 1883, Walla Walla, Wash. Educated at West Point. In action, 1909–10, in Philippines, against Moros. Assistant chief of staff, 82d Division, first World War. Went to Philippines, 1940, in command of 31st Infantry.

WAR CRIMES. On Aug. 8, 1945, the United States, Great Britain, Russia, and France provided a charter for an Allied War Crimes Commission. The commission promptly established a court, defined war crimes, and prepared a list of war criminals. The court convened at Nuremberg, Germany, and called before it 24 chief Nazis, including Goering, Keitel, von Ribbentrop, and Hess. The court tried them for waging a war of aggression, for maltreating prisoners of war, and for murdering and enslaving 5,700,000 Jews and more than 5 million other Europeans.

Allied nations and several occupied countries tried other Nazis individually. The British hanged the notorious Josef Kramer, the "beast of Belsen," and his chief torturer, Irma Grese. The Norwegian government sentenced its wartime premier, Vidkun Quisling, to the firing squad. The British hanged William Joyce (called "Lord Haw-Haw"), whose taunting radio voice they had heard nightly from Germany. The French imprisoned for life their head of state, Marshal Henri Pétain, and shot premier Pierre Laval as collaborators.

Immediately after V-J Day, General MacArthur established an Army commission to try Japanese war criminals. The commission divided a list of more than 2,000 accused into three classes: men who started the war, leaders who were responsible for atrocities, and

WAR'S END REVEALS ATROCITIES



men who actually committed outrages. Among the first to be executed was Gen. Tomoyuki Yamashita, the "tiger of Malaya." He was held responsible for the torture and killing of Philippine civilians during the Japanese occupation. Another was Lieut. Gen. Masaharu Homma, shot for his responsibility in the Bataan "death march." On April 29, 1946, an Allied tribunal indicted ex-premier Hideki Tojo and 27 others for starting a war of aggression, and condoning atrocities, including maltreatment of prisoners of war (*see* Prisoners of War).

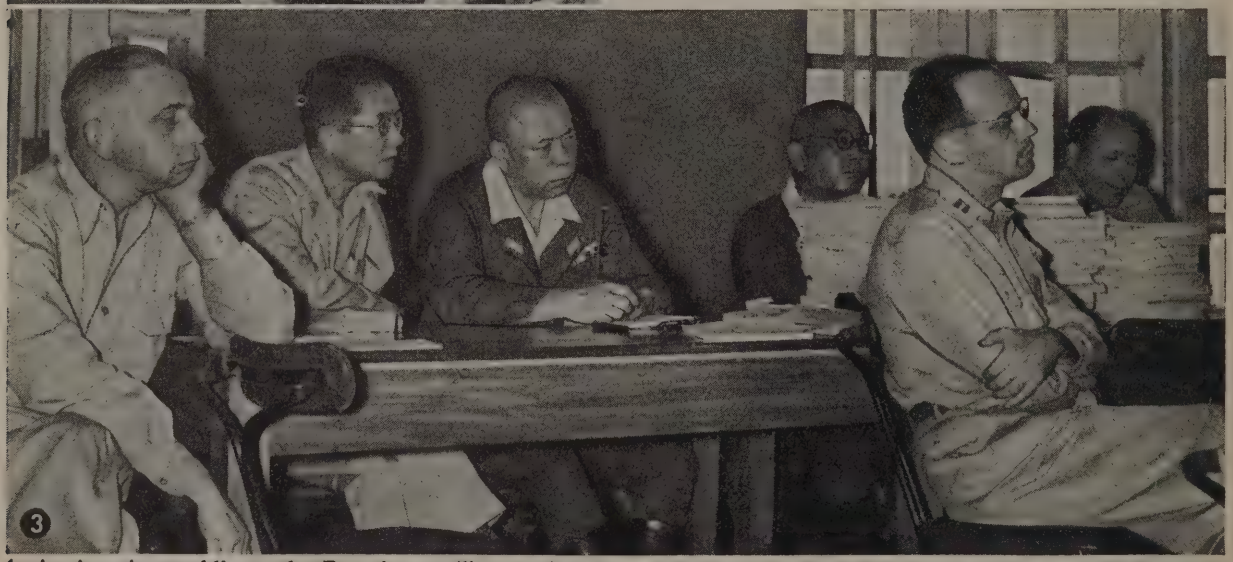
War in Europe. On Sept. 1, 1939, Germany invaded Poland. Two days later Great Britain and France, fulfilling their pledge to defend Polish independence, declared war on Germany. (For dates of all important events throughout the war, *see* Second World War Chronology.) By September 16 the swift-striking German armies had smashed all Polish resistance. On September 17 the Russian army marched into Poland from the east. On September 28 the Germans and Russians agreed to a partition of Poland (*see* Poland).

Then came a lull through the winter of 1939–40. The British and the French used the time for strengthening their defense behind France's Maginot Line along the Franco-German border from Luxemburg to Switzerland.

Swift German Triumphs in the West

The Germans opened their western campaign in April 1940 by overrunning Denmark in a day and Norway within a few weeks. This buttressed their position in the north and gave an excellent base for raiding Great Britain with planes and submarines. Then on May 10 they opened their main campaign by pouring across the borders of the Netherlands, Belgium, and Luxemburg.

The French and British saw in this an attempt to repeat the strategy used in 1914—a drive in force over the low northern plains toward Paris. They could not move in time to save the Netherlands, and the Dutch surrendered within a week; but the Allies poured



1. An American soldier and a French guerrilla examine a cremating oven at Struthof concentration camp. 2. Goering, Hess, and von Ribbentrop sit stolidly as von Papen protests his innocence before the Allied tribunal at Nuremberg. 3. Flanked by his counsel and interpreter, General Yamashita hears charges made by the American prosecutor.

their main strength into Belgium to stop the attack there. Then the Germans sprang their trap.

On May 14 a highly mechanized force, aided by dive-bombing Stuka airplanes, broke through the French line near Sedan and drove to the English Channel. This cut off the forces in Belgium from Paris and the Maginot Line, and the Germans quickly crushed these isolated and bewildered armies. On May 28 King Leopold surrendered his Belgian forces; by June 4 the British had evacuated their army and some French troops (*see* Dunkirk).

The French hastily improvised a defense for Paris, but the Germans soon broke through. On June 10 Italy attacked France; on June 14 the Germans entered Paris. On June 22 France signed an armistice with Germany. The Germans left the southern part of the country to the French under a government at Vichy, but occupied the rest (*see* France).

The Battles of Britain and of the Atlantic

On August 11 the Germans started bombing the British Isles to clear the way for an invasion. But the small British Royal Air Force had superior fighting planes and inflicted terrific losses upon the raiders. The Germans switched to night bombing during the winter of 1940–41, but finally abandoned the invasion project. Meanwhile, Germany tried to cut off Britain's seaborne supplies with submarine and airplane attacks against convoys from the United States and elsewhere. With the help of 50 overage American destroyers the British cut down their losses to endurable limits (*see* Submarine).

War in North Africa and the Balkans

In September 1940, the Italians opened warfare in the Mediterranean by trying to seize Egypt. To support this, Germany shifted a specially trained *Afrika Korps* under Field Marshal Erwin Rommel to Libya. The British army under General Wavell stopped the Italians, and even drove them half way back through Libya by early February 1941. But on March 24 Rommel's *Afrika Korps* counterattacked and drove the British back into Egypt, except for a force which held out in Tobruk.

Meanwhile Hitler was striking to conquer the Balkan Peninsula. Earlier, in October 1940, the Germans had been granted dominating positions in Hungary and Rumania. In March 1941, Bulgaria granted Germany the same right and admitted German troops.

Then, starting April 6, a swift German attack overwhelmed Yugoslavia and Greece. A weak British force, largely Australians, was driven from Greece to the island of Crete. On May 20, German air-borne troops assailed Crete, and by June 1 captured the island and most of the defenders. This gave a strong outpost to

DRIVING THE AXIS FORCES OUT OF NORTH AFRICA

In the winter of 1942 the Americans and British coöperated in a pincer drive to squeeze the Germans and Italians into Tunisia. On May 12, 1943, the enemy surrendered. Australian troops capture a member of Rommel's *Afrika Korps* in Libya (top). An abandoned German fighter plane stands in the Tunisian desert as a symbol of the Axis defeat (bottom).

STALKING THE FOE IN RUGGED SICILY

This American patrol advances ahead of the main fighting units to locate enemy positions. The men stay well apart.

cover the Balkan conquest, and isolated Turkey and the Black Sea entry to Russia.

Russia and the United States Are Brought in

Finding himself unable to conquer Britain, Hitler decided to dispose of Russia. On June 22 he attacked without warning from the Baltic to the Black Sea.

The attack met bitter resistance, but it ground forward, until the onset of winter found the German forces on the lower Don at Rostov and in the outskirts of Moscow. Then the prospect of imminent Russian defeat led the Japanese to tempt fate. On Dec. 7, 1941, they attacked the United States at Pearl Harbor, on Guam and Wake Island, and in the Philippines. At the same time they assailed the British and French in Asia.

The British renewed the battle for North Africa by invading Libya Nov. 18, 1941. By November 27 they relieved Tobruk; by December 23 they took Bengasi and pushed to El Agheila.

On May 26, 1942, the *Afrika Korps* launched a drive, breaking through at a desert crossroads called "Knightsbridge." They took Tobruk June 21; but the British held fast at El Alamein, 70 miles from Alexandria, in a 40-mile corridor between the sea and the Qattara, a huge, impassably eroded depression. From El Alamein the British began a westward drive October 23 under General Alexander and his field commander General Montgomery. By November 6 they had broken the Axis line, and then pushed the Germans back 240 miles toward Libya.

The Final Conquest of North Africa

Now the Americans and British unleashed their first massive joint blow. A large Allied invasion force landed November 8 at Morocco and Algeria and drove into Tunisia. They met stiff resistance at the western border, as did the advancing 8th Army in the east. After losing Kasserine Pass February 21, and regaining it February 25, 1943, the invasion forces on April 8 joined the 8th Army. General LeClerc's Fighting French, who had marched 1,500 miles from Lake Tchad, fought with them.

By May 2 the Americans cleared "Hill 609," 13 miles from Mateur. On May 8 the British captured Tunis and the Americans took Biserte. On May 12 von Arnim surrendered his 200,000 Axis troops.

The high-water mark of the German invasion of Russia was Stalingrad. Beginning in September 1942, the Germans had besieged the city. Then on Feb. 2, 1943, the Russians lifted the siege and launched an irresistible counteroffensive that did not halt until it carried them into Berlin.

While the Russians were pushing back the Germans during 1943, the Americans, British, and Canadians attacked and captured Sicily. Then they pursued the Germans into Italy. The Italian government surrendered September 3, but the Germans continued to fight on. On September 9, the American 5th Army invaded occupied Italy at Salerno, taking Naples October 1 and crossing the Volturno River by mid-October. Allied troops landed at Anzio Jan. 22, 1944, but were pinned down at the beachhead. The Americans also suffered a setback at

GUERRILLAS AID THE RUSSIAN COUNTERDRIVE

Russian guerrilla fighters study a map while planning how and where to conduct their next raid. Small bands of "irregulars" like this—roving behind enemy lines and receiving their orders from Red army officers—disrupted German transport and destroyed German supplies.

the Rapido River. The Allies began a siege at Cassino January 25 that did not break until May 18, when Cassino fell to British and Polish troops. They broke out of the Anzio beachhead May 25 and joined forces to enter Rome June 4. By mid-September the Allies were stopped at the Gothic Line north of Florence.

Allies Liberate France and Invade Germany

The Allied invasion of western Europe had been preceded by devastating air raids on enemy industrial and military centers in France and Germany for almost three years (*see* Germany). Then on June 6, 1944, the Allies stormed ashore on the Normandy coast of France. The Americans won the port of Cherbourg and in July broke through German resistance at St. Lô. During August 19–22, a combined force trapped the German 7th Army in the Falaise-Argentan area. General Patton's 3d Army then loosed armored forces which liberated Paris August 25. On August 15, American and French troops had landed in southern France. This force quickly raced up the Rhone Valley to join the northern armies. The Allies swept through Belgium, took Antwerp, and crossed the German border near Aachen.

But now the Germans held on their own border and along the lower Rhine. At the mouth of Antwerp harbor on the islands in the Scheldt River estuary they succumbed only to furious British and Canadian assault forces. On December 16 they even launched a savage counterattack in Luxemburg and the Ardennes (the Battle of the Bulge). They broke the American lines and encircled the 101st Airborne Division under Brig. Gen. Anthony C. McAuliffe in Bastogne. But he held out, replying "Nuts!" to a surrender demand; and by the end of January 1945 the Germans were driven back.

On February 10, a long, grinding drive through the Hurtgen Forest took dams on the upper Roer River and ended danger of flooding the troops below. The Allies promptly attacked, reached the Rhine at Cologne, and took a Rhine bridge intact at Remagen. Patton's 3d Army swept the Germans from the Saar and the Palatinate, and crossed the Rhine near Oppenheim.

Victory followed swiftly. The Allies took the Ruhr and drove toward Berlin. Canadian forces routed the Germans in the Netherlands. In the south the Americans and British pushed the Germans into northern Italy and forced their surrender April 29. In the east the steadily advancing Russians had already crossed Germany's border in January, and in April they were fighting in Berlin's suburbs.

AMERICAN TANKS ROLL INTO A CRUMBLING REICH

These tanks helped to form the spearhead of General Patton's armored sweep across France. Now they pass through a town in western Germany in pursuit of the retreating enemy. Notice the white flags displayed by the townspeople in token of surrender.

Germany's final disintegration began when American and Russian patrols met on the banks of the Elbe River on April 25, with the armies linking April 26. Shortly afterward (May 2) the Russians captured Berlin. Then the Allies wiped out scattered "pockets" of German resistance. On May 7 Germany acknowledged defeat by surrendering its remaining forces to the Allies.

WASP. *See* Women's Service.

WAVELL, SIR ARCHIBALD. In December 1940 General Wavell's desert armies drove the Italians out of Egypt and advanced into Libya as far as El Agheila. At the same time Wavell directed campaigns which regained British Somaliland and took Italian Somaliland, Eritrea, and Ethiopia. But in April 1941, he had to weaken his forces by sending an expedition to help Greece. The Germans overwhelmed it and drove the weakened main force from Libya. In July Wavell was transferred to duty as commander in chief in India. In June 1943 he became viceroy of India.

Born 1883, Essex. Son of a general. Educated at Winchester and Sandhurst. Appointed to Black Watch, 1901. Served in Boer War and on Indian frontier. Lost an eye in first World War. Field marshal, 1943; viceroy, 1943.

WAVES. *See* Women's Service.

WEATHER FORECASTING. Transocean flights and long-range bombing, added to other demands of war, brought unprecedented development in weather forecasting during the second World War. The United States trained many thousands of men for this service and established hundreds of data-collecting posts and forecasting centers around the world.

Advances in forecasting centered upon foretelling flying conditions in the upper air and improving long-range prediction for weeks or even a season. A fruitful expedient for doing this was *analogy forecasting.*

TESTING THE WIND OVER GUADALCANAL

A lightly clad meteorologist and his helper inflate a balloon for testing air movements in the upper atmosphere. Weathermen made thousands of such tests every day.

Past records were searched to find a state of weather which matched the period under consideration; and the march of weather in the older record was used as a basis for prediction.

WEDEMEYER, LIEUTENANT GENERAL ALBERT C. As a member of the Operations Division of the General Staff, Lieutenant General Wedemeyer went with General Marshall to the Allied strategy conferences of 1943. He had an important part in planning over-all strategy for the invasion of Europe. In October 1943 he became deputy chief of staff to Adm. Louis Mountbatten, United Nations' commander of southeast Asia. When General Stilwell was suddenly recalled from the China-Burma-India theater, Wedemeyer received the important China command.

Born 1897, Omaha, Neb. Graduated from West Point, 1918. Assigned to the Philippines, 1923, and to the 15th Infantry, Tientsin, China, 1928. Attended German General Staff School, *Kriegs Akademie*, 1936-38.

WELLES, SUMNER. As assistant secretary and undersecretary of state from 1933 to 1943, Welles did much to shape United States foreign policy. He was author of the "good neighbor" policy toward Latin America. The information he gathered on a mission to Europe in 1940 helped determine the administration's attitude toward the war. In 1942, at a conference of Latin American nations in Rio de Janeiro, he helped align those nations against the Axis. In 1943 differences with Secretary of State Hull forced Welles to resign.

Born 1892, New York City. Educated at Groton and Harvard. Secretary to Tokyo embassy, 1915–17; to embassy at Buenos Aires, 1917–19. Latin American Affairs Division, State Department, 1920–21; chief, 1921–22. Commissioner to Dominican Republic, 1922.

WILHELMINA. When the Germans blasted their way into the Netherlands in May 1940 they tried desperately to kill or capture Queen Wilhelmina. The Dutch cabinet urged Wilhelmina to leave the country. They felt she would be a symbol of Dutch independence if alive and free. Wilhelmina consented. Eluding the Nazis, she crossed the English Channel in a British destroyer. In London she set up a government-in-exile which the Allies recognized as the lawful Netherlands power.

Wilhelmina lived simply in London, as she had always done at home. She surrounded herself with loyal, hard-working Dutchmen and with them handled the complicated problems of her disrupted empire. She broadcast advice and encouragement to her people daily and urged resistance. In 1942 and again in 1943 she flew the Atlantic Ocean to visit her daughter Juliana and her grandchildren, who were living in Canada.

In March 1945 Queen Wilhelmina visited the liberated area of the Netherlands, and in May she returned home to stay. Her welcome proved that she had lost neither prestige nor popularity. She strengthened her position by giving preference in government positions to resistance and underground leaders.

Born 1880, daughter of William III. Succeeded to the crown, 1890; her mother, Queen Emma, reigned as regent until 1898. Married Henry, Duke of Mecklenburg-Schwerin, who died in 1934. One daughter, Crown Princess Juliana; three grandchildren, Beatrix, Irene, and Margriet. Her son-in-law, Bernhard of Lippe-Biesterfeld, spent much time in Netherlands as head of the resistance forces.

WOMEN MARINES. *See* Women's Service.

WOMEN'S SERVICE. History's greatest war called for the services of women as well as of men. In England, Russia, Germany, and Japan women were conscripted for industry and for uniformed military services. Women of the occupied countries played heroic rôles in the underground and partisan warfare. American women were not subject to conscription, but between 300,000 and 400,000 entered military units voluntarily. The number of employed women increased 36 per cent, principally in factories to help boost war production. In addition, millions of women worked as unpaid volunteers in the wartime programs of the welfare agencies.

The following women's organizations carried on non-combat activities for the armed forces:

Women's Army Corps (WAC)—originally the *Women's Army Auxiliary Corps*—was created May 14, 1942, with Col. Oveta Culp Hobby as director. She was succeeded by Col. Westray Battle Boyce in July 1945. Women between 20 and 50 years of age were eligible. The corps reached a maximum strength of 100,000. WACs received six weeks' basic training, and further schooling for specialized tasks. Enlisted women were commissioned after graduation from officer candidate schools. WACs did about 250 different jobs in all branches of the Army. About 18 per cent served overseas.

Women Accepted for Volunteer Emergency Service (WAVES), was created July 30, 1942, for Navy duty under the directorship of Lieut. Comdr. Mildred H. McAfee (later promoted to captain). Women 20 to 36 years of age who enlisted were given an indoctrination course at the Naval Training School at Hunter College, New York City. Further

training for specialist ratings and commissions was given elsewhere. The corps numbered about 86,000 at the end of the war. WAVES served as yeomen, storekeepers, metalsmiths, radiomen, aviation mechanics, truck drivers, laboratory and medical technicians, air traffic controlmen, weather observers, and in scores of other posts.

Women's Auxiliary Reserve, Coast Guard (SPARS), commanded by Lieut. Comdr. Dorothy C. Stratton (later promoted to captain) was established Nov. 23, 1942, to train women for shore posts with the Coast Guard. The SPARS numbered 10,000 by late 1944. Enlisted SPARS outnumbered enlisted men at Coast Guard headquarters, and they served at air stations, port offices, communication centers, and training stations.

Women's Reserve, U. S. Marine Corps was organized Feb. 15, 1943, with Maj. Ruth Cheney Streeter (later promoted to colonel) as director, to serve in shore posts within the United States and possessions. The reserve reached its full strength of 18,000 enlisted women and 1,000 officers in June 1944. Training was given at Camp Lejeune, New River, N. C. Duties included overhauling and repairing airplanes and equipment, gunnery instruction, air traffic control, and printing photographs.

Women acted as service pilots for the Air Forces within the limits of the continent, but their organizations—the Women's Airforce Service Pilots (WASP) and Women's Auxiliary Ferrying Squadron (WAFS) were denied militarization by Congress and were deactivated Dec. 20, 1944.

AMERICAN WOMEN IN WAR INDUSTRIES AND FIELD HOSPITALS

Millions of women poured into American war plants to help break production records. 1. These women are assembling Marine rubber assault boats. 2. This grandmother is processing flare gun parts on a drill press. She also did factory work during the first World War. 3. An Army nurse in an emergency tent hospital in Normandy treats a captured enemy soldier. 4. A former five-and-ten-cent store girl operates a compressed-air grinder in an aircraft motor plant.

The highly satisfactory service given by the WACs, WAVES, Marines, and SPARS led the Army, Navy, and Marines to ask Congress for permanent peacetime corps of women.

More than 100,000 nurses joined the Nurse Corps of the Army and the Navy and served as commissioned officers. The Army enrolled about two-thirds of them, since nursing in Navy hospitals is done by medical corpsmen, and the nurse's work is mainly in training and supervision. Nurses in Army field hospitals shared the hardships and dangers of the soldiers. Many were killed in line of duty. Women of each corps flew with their patients in hospital evacuation planes.

Civilian Women in Industrial and Welfare Work

Many American women went to the war theaters as civilian workers for the Red Cross, the UNRRA, the Office of Strategic Services, the OWI, and other agencies.

Women volunteers in every American community were the "labor force" of the welfare agencies. They carried on a vast program of aid, recreation, and entertainment for service men and women, and relief work for war sufferers. Red Cross groups folded bandages, sewed and knitted for service men and war victims, and packed boxes for prisoners of war (*see* Red Cross). Nurse's Aids and Gray Ladies attended hospital patients. Members of the American Women's Voluntary Services operated canteens and rest quarters, drove cars for military and defense officials, and acted as couriers. United Service Organization volunteers were hostesses, checkroom girls, canteen waitresses, letter writers, and the like at clubrooms at training camps and in many cities (*see* USO). Travelers' Aid volunteers served at information desks and railway-station lounges.

As the manpower shortage became more acute, women surged into factories and offices, until some 20 million were employed. They took over hundreds of jobs that had been thought too heavy for women. They became welders, riveters, lathe and press operators, wheelrights, section hands, truck and taxi drivers, and crane operators. They made up 36 per cent of the labor force in the aviation industry. Women in war plants had their organization of Women Ordnance Workers (WOWs).

British and Russian Women in the War

All English women between 18 and 50 were subject to compulsory registration and conscription. On registering they could choose between industry and the auxiliary services. Some 7,000,000 had full-time war jobs. At least 500,000 were in military services. Women exempted from conscription by age or family duties carried on the work of the voluntary organizations or held part-time jobs in industry.

Largest of the services was the Auxiliary Territorial Service (ATS). Their army and home guard work included "manning" searchlights and operating intricate machinery for aiming antiaircraft guns. The Women's Royal Naval Service (WRENS) replaced men in many shore establishment tasks. They could volunteer for duty at overseas bases. The Women's Auxiliary Air Force (WAAFS) handled some 70 trades connected with R.A.F. operation. Women fliers of the Air Transport Auxiliary ferried planes. Girls of the Women's Land Army helped English farmers produce food.

Russian women went into combat beside the men of the Red army. As snipers and nurses they were in much of the heaviest fighting. Women pilots flew fighter planes and bombers. Russian civilian women carried on a larger share of industrial, transportation, and agricultural work behind the lines than did the women of any other country.

UNIFORMS OF U.S. WOMEN'S SERVICES

1. Navy blue uniform of Coast Guard and Wave enlisted women. 2. Forest-green uniform of the woman Marine. 3. Olive-drab uniform and insignia of an Army nurse. 4. A WAC officer with the Pallas Athena insigne on her lapel. 5. Navy nurse's blue summer suit and white cap. 6. WAVE officer's Navy uniform with reserve blue sleeve stripe and shirt, black purse, gloves, shoes.

YAMAMOTO, ADMIRAL ISOROKU. Admiral Yamamoto, commander in chief of the Japanese navy, smashed Pearl Harbor. But this pioneer of aircraft-carrier warfare soon met defeats in the Coral Sea and Solomons. In April 1943, he died in a bomber, shot down over the Solomons by an American flier, Lieut. Col. Thomas G. Lanphier, Jr. His reported boast that he would dictate peace in the White House has been exploded as a propaganda hoax perpetrated by Japan's militarists.

Born 1884, Nagaoka City. Graduated naval academy at Yetajuna, 1904. Fought in Russo-Japanese War. Became naval attaché in United States, 1925; delegate to London naval talks, 1934; commander First Fleet, 1939.

YAMASHITA, LIEUTENANT GENERAL TOMOYUKI. Lightning conquests of Malaya and Singapore early in 1942 earned Yamashita the nickname "Tiger of Malaya." He was called from Manchuria in October 1944 to command the Japanese army in the Philippine Islands. He let his men kill and mistreat thousands of civilians, particularly in Manila, before he surrendered to MacArthur's forces in Baguio in September 1945. For this Yamashita was tried in Manila by a United States military commission, the first accused war criminal to be arraigned in the Pacific area, and sentenced to death. He was hanged near Los Banos, Feb. 23, 1946.

Born 1885. Educated in Japanese and German military schools. Commanded division against guerrillas in north China, 1938. Studied war techniques in Germany, 1941.

YUGOSLAVIA. The kingdom of the Serbs, Croats, and Slovenes, later called Yugoslavia, was hastily put together after the first World War. From its beginning the patched-up nation suffered from internal strife.

On April 17, 1941, the Germans conquered Yugoslavia after 11 days of fighting. Later two resistance groups rose. General Draja Mihailovich, loyal to the exiled King Peter, organized in Serbia a group called Chetniks. In the mountainous west Josip Broz ("Marshal Tito"), a Communist, led the Partisans. While fighting the Germans, the two groups waged civil war. Mihailovich fled when Russian forces joined with Tito and took Belgrade (October 1944). On Nov. 29, 1945, Tito's Communist controlled assembly abolished the monarchy and proclaimed the federal People's Republic of Yugoslavia. Supported by Russia (with which it signed a treaty of friendship) Yugoslavia demanded from Italy the port of Trieste. Mihailovich was captured and shot for treason. The nation's most pressing problem was food. To fight near-famine, Tito established agricultural coöperatives.

ONCE KING OF YUGOSLAVIA

Peter II "ruled" 1934–45

ZHUKOV, MARSHAL GEORGI KONSTANTINOVITCH. Tough-minded and brilliant, "Stalin's best general" hurled German hordes from the threshold of Moscow in 1941–42. Then, in 1942–43, he freed Stalingrad and turned the tide of war. In March 1944 he took command of the 1st Ukrainian army. It drove clear across Poland deep into Czechoslovakia. In January 1945 he led the 1st White Russian army, and by May had taken Berlin. As its conqueror, he headed the delegation that accepted Germany's surrender there on May 8. Until April 1946, he had charge of Russian occupation forces in Germany.

Born 1895, Strelkova, Russia. Entered army as private, 1915. Attended Frunze military academy. With tanks, defeated Japanese in Mongolia, 1939. Made chief of general staff and vice-commissar for defense, 1941.

YUGOSLAVIA GUERRILLA "PARTISANS" AND THEIR LEADER, MARSHAL TITO

A patrol of Tito's Partisans rests on a snow-covered slope high in the Balkan Mountains in 1944. In the photograph at the right stands Marshal Tito (Josip Broz). The Communist Partisans fought not only the Nazis but also the royalist Chetniks led by Gen. Draja Mihailovich. Partisan success led England and the United States to divert armed aid to Tito in 1943.

EPISODES *of* INGENUITY *and* HEROISM

How Men of Our Armed Forces, Regardless of Their Rank, Met the Challenge of Danger with Split-Second Thinking, Teamwork, and Sacrifice

DRABIK'S DECISION OF DESTINY. Sergeant Alexander Drabik did the right thing at the right instant. In a split second, he changed the course of the war on the Western Front. It was Wednesday afternoon, March 7, 1945. With the 9th Armored Division of the U. S. 1st Army, he had entered Remagen. There the Ludendorff Bridge, still intact, invited the Americans to cross the Rhine and to hit the vitals of the Reich. To delay meant loss of the bridge. It was loaded with dynamite and might go at any second. To cross meant almost certain death. Then, at 3:50 o'clock, without hesitation, Drabik acted. Across the bridge he dashed, at the head of his ten riflemen shooting as they went. They felt the bridge rock as a German touched off a charge. But the bridge held firm. More Americans rushed on and seized Germans before they could set off the main charges. American engineers came on and snipped the wires leading to the bundles of dynamite set in the main supports. Prisoners later revealed that the charges were set to explode at 4:00, only ten minutes after Drabik decided to act.

Drabik was first across the bridge, and the U. S. 1st Army became the first army of the war to cross the Rhine. Within the next ten days, about 70,000 men and thousands of tons of supplies streamed ceaselessly over the bridge. Then its central span collapsed. But the bridge had already done its work. Indeed, the quick decision of Drabik had shortened the war by an estimated three months and saved an untold number of lives.

HOW A GUNLESS G. I. WON GLORY. A conscientious objector, he refused to bear arms in defense of his country. But as medical aid man of the 307th Infantry on Okinawa, Pvt. 1st Class Desmond T. Doss proved his devotion to mankind. On April 29, 1945, 75 men of his detachment lay wounded while fierce fire drove their comrades back. Private Doss alone remained to tend the wounded. He carried them away, one by one, and with a rope-supported litter, lowered them to safety down the face of a cliff. On May 2, he rescued a wounded man 200 yards in front of his lines. On May 5, he braved shells and bullets to assist an injured artillery officer. Later in the day, he crawled to within 25 feet of the enemy, gave aid to a wounded man, and carried him 100 yards to safety. On May 21, when giving first aid, he was felled by a grenade. While stretcher bearers were carrying him away he noticed a more severely injured man. Private Doss crawled off the stretcher and told the bearers to attend to that man first. Awaiting their return, Doss was struck again. On October 12, President Truman decorated him with the Congressional Medal of Honor. He was the first conscientious objector to receive this award.

HE WAS ALERT TO THE LAST SECOND. A bomb hit LST 473 off Lae, New Guinea, Sept. 4, 1943; blew the helmsman from his wheel; sent the vessel out of control. The same bomb mortally wounded Johnnie David Hutchins, seaman first class. But before he fell dead, he clutched the wheel and steered the craft out of the path of an enemy torpedo. He was awarded posthumously the Congressional Medal of Honor. A destroyer escort named for him was launched at Orange, Tex., May 2, 1944.

HE RETURNED A GOOD TURN. While medical men worked to save his life, Corp. Richard E. Bush saved theirs. He had been seriously wounded that day, April 16, 1945, while leading his unit of the 1st Battalion, 4th Marine Regiment, through heavy artillery fire on Okinawa. Indeed, his unit that day had been the first to break through the Japanese inner defenses of Mount Yaetake. Now, as he lay flat to receive medical attention, a grenade landed right in the midst of the group. Corporal Bush snatched the grenade to himself. His body absorbed the shattering shock of the explosion. On October 5, he had recovered enough to receive the Congressional Medal of Honor from President Harry S. Truman at the White House.

HOW A MARINE "BLOCKED OUT" DEATH. First Lieutenant Carlton R. Rouh of the 5th Regiment, 1st Marine Division, suddenly turned football player to save lives on Peleliu Island the afternoon of Sept. 15, 1944. He had rushed ahead of his mortar platoon to within five yards of an enemy-held cave when a Japanese rifle bullet pierced his stomach. He staggered. His men sped forward to help him. At this instant a grenade hurtled toward him from the cave. He saw the grenade on the ground. At the same time he saw his men coming toward him too fast to stop. Like a football player, he blocked off the two closest men, and with the same motion flung himself upon the grenade. It exploded at once. His lightning action had saved two men within four seconds. The grenade all but blew him to pieces. But, thanks to rugged health and modern medical science he was very much alive on June 15, 1945. That day he was at the White House to receive the Congressional Medal of Honor.

SERGEANT SMITH—EVERY INCH A FIGHTER. Staff Sergeant Maynard Smith had yet to be tested in battle. He was a small gunner, 5 feet 4 inches tall, who fitted comfortably into a ball turret of a Flying Fortress, and this was his first mission over enemy territory. It was May 1, 1943. His plane was taking part in a bombing attack on U-boat pens at St. Nazaire, France. Suddenly the plane was hit; it took fire. Smith hurried into the body of the plane and fought the flames single handed. Three of his mates, thinking the ship doomed, bailed out. Smith used all the fire extinguishers and water bottles, then beat out the rest of the flames with his hands. In the midst of his fire fighting, he gave first aid to a wounded crewman and jumped from side to side of the plane, manning one waist gun and then the other to fight off German planes that were roaring in for the kill. For fully 90 minutes he fought fire and Nazis. He saved his own life and those of the six other men who stayed on the plane until it had flown back to its base in England. Not long afterward, Secretary of War Henry L. Stimson placed the blue ribbon of the Congressional Medal of Honor around Smith's neck.

THAT OTHER MEN MIGHT LIVE. To cry out for help would tell the Japanese the position of his Marine outfit and would cost many lives. So Pfc. Luther Skaggs, Jr., crouching in a foxhole, gritted his teeth and quietly applied a tourniquet to his left leg, which a Japanese grenade had shattered. He fought on for eight hours until the battle had cleared enough for him to be removed to a medical station. For this courage at Guam on July 21, 1944, he was awarded the Congressional Medal of Honor at the White House on June 15, 1945.

HE MADE A HEDGEROW SPIT DEATH. One American squad had been captured by the Germans and another thrown back. This left only Sgt. Joseph E. Schaefer and his squad to stop that breakthrough near Stolberg, Germany, Sept. 24, 1944. The Germans approached from two directions, one group stealing along a hedgerow. Sergeant Schaefer quickly sized up the situation. With gunfire he mowed down the group along the hedgerow. Then, with no cover, he dashed to the hedgerow and used it as a fortress. From there he poured bullets into the second group, killing five and forcing the rest to retreat. He took ten prisoners. When his company counterattacked, he ran out ahead, overtook the fleeing Germans, and freed the American squad that had been captured. He received the Congressional Medal of Honor at Neurenstedt, Germany, July 16, 1945.

HOW AN INDIAN HERO HUNTED GERMANS. Of Creek Indian blood, with a dash of Irish, Lieut. Ernest Childers combined courage, Indian strategy, and keen marksmanship to win fame with the American forces against the Germans in the Italian campaign. The place was the Salerno front;

the time, Sept. 22, 1943. A broken instep had seemingly put Lieutenant Childers out of action for the day. But when word came that machine gun and mortar fire had pinned down his battalion, he limped from the first-aid station and led eight men in a hunt for the hidden enemy. He bore the brunt of the job, ordering his men to cover him with their fire while he advanced alone. Two rifles cracked at him from a near-by house; but when his gun replied, the two snipers slumped, then stiffened in death. With carbine ready, he crept up behind a machine-gun nest as though stalking game. The two occupants never knew what hit them. Next, he wiped out another gun position and pointed out still another for his men to wipe out. Finally, to vary the hunt, he bagged a live prisoner—a German mortar observer. The enemy guns were hushed; Lieutenant Childers had hunted well. He couldn't recall how many men he had killed, but hinted "it will run into numbers." At Allied headquarters in Naples, April 12, 1944, Gen. Jacob L. Devers presented him with the Congressional Medal of Honor.

HIS QUICK THINKING SAVED OTHERS. A few minutes of this murderous fire—and Pvt. Norman Arsenault and his Marine buddies would lie dead on Saipan's shore. A crevice in the small cliff ahead was spitting a hailstorm of bullets. But Private Arsenault's mind worked faster than a Jap's trigger finger. He ran back into the sea, turned to face the crevice, and fired. His plan worked. While the Japs turned their fire on him, about half his platoon seized the chance to rush ahead to safety atop the cliff. His ammunition spent, Private Arsenault hurried back to his buddies, borrowed some bullets, then splashed out into the water to resume his job. He fired until the rest of his platoon had moved out of the line of Japanese fire. His job done, the 18-year-old Marine rose to follow his buddies. A bullet struck him dead.

"THE BRAVEST MAN I HAVE EVER SEEN." Lieut. Comdr. Joseph Timothy O'Callahan, Jesuit priest, had the strength of many men that day of March 19, 1945. He was ship chaplain of the aircraft carrier *Franklin*, cruising along hardly 60 miles from the island of Shikoku, Japan. While he was at breakfast, two bombs hit the carrier and in 30 seconds turned it into an inferno. Stored-up bombs and rockets, licked by tongues of fire, blew out the carrier's insides and sent flames 400 feet into the air. Planes burst into flame, their machine guns sputtering and their bombs rolling about the deck. Men lay dead or dying. The whole ship seemed ablaze.

Never had Father O'Callahan's mates needed him so desperately. Instantly, every resource of his being—spiritual, mental, and physical—fought for his men. He administered last rites to the dying, set up a first-aid station, helped the medical corpsmen, and directed suffocating men through a hatchway to fresh air. Under his reassuring words, numbed men suddenly revived and then helped him turn hoses on the fires. No better fireman ever lived. He saw hot bombs rolling on the deck, and he played the stream just a foot from their touchy noses—close enough to cool them without setting them off. Again, he rushed into a magazine of five-inch shells that was about to blow up with the heat. With water he cooled off the shells, then helped to carry them out and dump them overboard. Another time, he directed the hose to wash overboard a stream of flaming gasoline. When, after hours of work, Father O'Callahan saw that the crisis was over, he led men below deck to search for the dead and helped to prepare bodies for burial.

No other ship in the U. S. Navy had suffered so heavy a loss in a single engagement. Capt. Leslie E. Gehres' casualty roster showed 832 dead or missing and 270 wounded out of some 3,000 men aboard. But the tragic list would have been much longer had it not been for the heroism of Father O'Callahan and many others; and the twisted, battered *Franklin* would not have come home, under her own power, to the Brooklyn Navy Yard.

On Jan. 23, 1946, Father O'Callahan became the first chaplain in the military services to receive the Congressional Medal of Honor. He was praised by President Truman for having done his "duty to God and man." Father O'Callahan prized just as highly the words of his captain, who had said of him simply, "the bravest man I have ever seen."

STORY OF A PRICELESS SCRAP OF PAPER. Off Salerno, a German bomb struck an American warship and caved in the exits of its compartment No. 3. Four radio men—R. J. Garmuchsky, Joseph Costa, Charles Clark, and James Lewes—were trapped there in the darkness, deep below the water line. It would take many hours for their mates to cut through to them.

The trapped men sent up radio signals pleading for food and water. But how would these be dropped into the vault of living death? It is true that a ventilating shaft led to the men below. But its sharp angles prevented the men above from dropping anything through it.

Then the radio men had an idea. Scraps of paper would *fly up* the ventilator! So Garmuchsky attached a stout thread to a piece of paper. The updraft carried it to the men above. They fastened a rubber hose to the thread. Then the men below pulled the thread and drew the hose down with it. With the hose came water, fruit, and sandwiches. Garmuchsky afterwards sent up a diagram of the compartment to guide the rescue workers. Sixty hours after the bomb had struck, the rescue drills began to let light into the compartment. Soon the four radio men were shaking hands with Capt. Robert Cary, commander of the ship.

HE PUT HIS LESSONS TO WORK. During his basic training, Pvt. Duane N. Kinman, 18-year-old medical aid man, heard his instructor describe a throat operation. A year later, on a battlefield, Kinman was glad he had paid close attention. It was the 3d Army's offensive against Metz, and the young medical aid man was working under heavy shell fire. He saw one of his riflemen fall, his throat torn by a mortar shell. The rifleman was gasping for breath. The shell had fractured his windpipe; already he was turning blue from suffocation. From his lesson, Kinman knew that he would have to insert a tube into the windpipe to let in air. He whipped out his pocketknife and, while 2d Lieut. Edwin M. Eberling held the patient, he slit the throat and then the windpipe, just below the fracture. Then he inserted, as a tube, a part of the patient's fountain pen. Immediately the patient started to breathe and the blue of death faded from his cheeks. Soon he was walking, assisted by Private Kinman and Lieutenant Eberling. At the hospital, where the patient recovered, army doctors highly praised Kinman and the operation which he had performed without anesthetics and surgical instruments.

A COMMAND THAT STIRRED THE WORLD. "Take her down!" This command has gained a place in history beside the words: "We have just begun to fight" and "Don't give up the ship!"

It was the night of Feb. 6–7, 1943. Commander Howard W. Gilmore was running his submarine on the surface of the Pacific off Rabaul, New Britain, in quest of more prey. On this mission, he had already sunk a cargo ship and seriously damaged a gunboat and a merchantman. Before this, he had sunk two 1,700-ton destroyers and nearly 30,000 tons of merchant shipping, and had damaged a third destroyer.

Suddenly a Japanese gunboat spied the submarine and rushed in to ram it. The submarine dodged, then rammed the gunboat instead. The gunboat was sinking, but had time to turn its searchlights on the submarine and rake it with heavy machine-gun fire. Ensign William Wadsworth Williams and Fireman 3d Class Wilbert Fletcher Kelley died at their posts. Commander Gilmore fell, critically wounded. To save the other men he instantly ordered all hands below. Then it came time to carry him below. That would take a minute or two—time enough for the gunboat to train its 3-inch gun on the submarine, time enough to sink his ship and kill his crew. His second in command, Lieut. Comdr. Arnold F. Schade, wanted to risk those moments for his chief.

"Take her down." Commander Gilmore replied.

This was an iron command. Lieut. Comdr. Schade hurried down the conning tower, the hatch clanged shut, and the sea swallowed the submarine. Helpless, the commander floated off the bridge and, of his own choosing, perished alone in the sea. Weeks later, the submarine came safely home. Commander Gilmore was posthumously awarded the Congressional Medal of Honor.

SECOND WORLD WAR—CHRONOLOGY

• 1939 •

SEPTEMBER 1. Germany invades Poland, starting war.
3. Britain, France, Australia, New Zealand declare war. British liner *Athenia* torpedoed; 122 lives lost.
10. Canada declares war on Germany.
17. Russia occupies east Poland.
23. Act of Panama sets up "safety zone" extending 300 miles from coasts of all American republics.
27. Warsaw surrenders to Germans.
28. Germany and Russia agree to partition Poland.
29. Esthonia forced to accept Russian military protection.

OCTOBER 5. Latvia forced to accept Russian military protection.
10. Lithuania forced to accept Russian military protection.
14. Russia demands bases from Finland. U-boat sinks British battleship *Royal Oak* in Scapa Flow harbor.
19. Turkey signs mutual aid pact with France, Britain.

NOVEMBER 4. Roosevelt signs Neutrality Act, repealing arms embargo.
8. Hitler escapes bomb at Nazi rally in Munich beer hall.
30. Russia invades Finland in undeclared war.

DECEMBER 2. Russia captures Petsamo, Finnish nickel port.
14–Jan. 7. Finns defeat Russians at Salla and Suomussalmi.
17. German crew scuttles *Admiral Graf Spee* after 3 British cruisers force it into harbor at Montevideo, Uruguay.
18. First Canadian troops land in England.

• 1940 •

JANUARY 1. Russia attacks Finnish Mannerheim Line.

FEBRUARY 12. First Australian troops land in Egypt.
16. British destroyer rescues nationals from Nazi prison ship, *Altmark*, in Norwegian territorial waters.

MARCH 1. Russians crack Mannerheim Line, seize Vyborg (Viipuri).
12. Finland signs peace treaty with Russia.

APRIL 9. Germany occupies Denmark, invades Norway.
21. First of 12,000 Allied troops land in Namsos, Norway.

MAY 3. Allies evacuate all Norway but Narvik. King Haakon escapes to London.
10. British troops land in Iceland. Germany invades Belgium, Netherlands, Luxemburg. Churchill succeeds Chamberlain as British prime minister.
11. Nazi paratroops seize "impregnable" Eben Emael fortress.
13. Queen Wilhelmina of the Netherlands escapes to London.
14. The Netherlands surrenders. Dutch casualties, 9,800. Rotterdam bombed. Nazis take Sedan, opening the battle of the Meuse.
17. Germans take Louvain and Brussels.
19. Gen. Gamelin succeeded by Gen. Weygand as Allied commander in chief.
20. British begin retreat through Belgian ports.
21. Germans reach French coast at Abbeville.
28. King Leopold surrenders Belgium's army of 500,000.

29–June 4. British Expeditionary Force plus thousands of French troops evacuated from Dunkirk.

JUNE 5. Battle of France begins at the Somme.
9. Norway surrenders, British withdraw from Narvik.
10. Italy declares war on France and Britain.
14. Germans enter Paris. Spain occupies Tangier.
16. Marshal Pétain succeeds Paul Reynaud as French premier.
17. Pétain asks Germany for armistice terms for France.
22. France signs armistice with Germany.
24. France signs armistice with Italy.
27. Rumania cedes Bessarabia, northern Bucovina to Russia.

JULY 3. British attack French fleet at Oran, Algeria.
11. Pétain becomes dictator of France.

AUGUST 3. Lithuania annexed as Soviet republic by Russia.
5. Latvia annexed as Soviet republic by Russia.
6. Esthonia annexed as Soviet republic by Russia.
9. British withdraw from Shanghai and North China.
11. Germany launches all-out air "blitz" on England.
17. United States, Canada set up joint defense board.
19. Italy occupies British Somaliland.
21. Rumania cedes southern Dobruja to Bulgaria.
25. British planes first bomb Berlin.
27. United States trades Britain 50 destroyers for Atlantic bases.
30. Rumania cedes Transylvania to Hungary.

SEPTEMBER 1. United States National Guard called to duty.
12. Italy begins invasion of Egypt.
16. Roosevelt signs Burke-Wadsworth Compulsory Military Service Act.
22. France grants Indo-China bases to Japan.
25. Germany installs Vidkun Quisling as Norwegian premier.
26. United States limits scrap iron and steel exports to Western Hemisphere and Britain only.
27. R.A.F. turns tide in battle of Britain. Japan joins Rome-Berlin Axis.

OCTOBER 10. Germany occupies Rumania.
16. United States men register in first peacetime draft.
27. DeGaulle establishes "Free French" government.
28. Italy invades Greece.
29. Selection of American draftees begins.

NOVEMBER 11–12. British planes cripple Italian fleet at Taranto.
20. Hungary joins Axis.
23. Rumania joins Axis.

DECEMBER 6. Greeks rout Italians from Porto Edda, Albania.
9. British strike back at Italians in Egypt.

• 1941 •

JANUARY 20. British attack Italians in Eritrea.

FEBRUARY 5 British drive Italians from the Sudan.

MARCH 1. German-occupied Bulgaria joins Axis.
7. British win Italian Somaliland.
11. Roosevelt signs Lend-Lease Act. French Indo-China cedes territory to Thailand.
25. Yugoslavia joins Axis.
27. Yugoslav revolt denounces pact, ousts regent.
28 British sink 5 Italian warships off Cape Matapan.
30. United States seizes Axis ships in American ports.

APRIL 4. British yield Bengasi, Libya, to Axis attack.
6. Germany attacks Yugoslavia, Greece. British take Addis Ababa, Ethiopian capital.
9. United States takes Greenland under protection.
12. British lose Bardia, Libya.
17. Yugoslav army surrenders. Britain occupies Iraq.
30. Germans occupy Athens; British forces leave Greece.

MAY 10. Hess flies to Scotland, interned by British.
16. Iceland ends Union with Denmark.
20. German paratroops invade Crete.
21. U-boat sinks American freighter *Robin Moor* in Atlantic.
24. German *Bismarck* sinks British *Hood*.
27. British fleet and air units sink *Bismarck*.

JUNE 1. British evacuate Crete.
8. British and Free French invade Syria.
14. United States "freezes" German and Italian assets.
22. Germany invades Russia. Italy declares war on Russia.
26. Finland enters war against Russia.

JULY 7. United States occupies Iceland, as requested July 1 by the government of Iceland.
14. British occupy Syria; Vichy French sign armistice.
23. French give military control of Indo-China to Japan.
25. United States and Britain "freeze" Japanese assets.

AUGUST 1. United States bans gasoline export to Japan.
6. Germans capture Smolensk, Russia.
14. Roosevelt, Churchill announce Atlantic Charter.
25. Britain, Russia occupy Iran to prevent Nazi coup.

SEPTEMBER 11. Roosevelt orders Navy to fire on Axis raiders in American defense zones.
19. Germans enter Kiev, Russia.
29. United States pledges matériel to Russia.

OCTOBER 9. Turkey signs trade treaty with Germany.
11. United States takes German radio station in Greenland.
17. Germans take Odessa.
18. Tojo appointed premier of Japan.
20. Moscow declares state of siege.
25. Kharkov falls to Germans.
31. U-boats sink United States destroyer *Reuben James* off Iceland.

NOVEMBER 14. Japanese envoys submit "last proposals" to United States.
17. Neutrality Act amended to arm American merchant ships.
22. Germans take Rostov, key to Caucasus.
26. United States proposes economic coöperation to Japan.
29. Russians recapture Rostov, take offensive in Ukraine.

DECEMBER 2. Roosevelt appeals to Hirohito to intervene for peace.
7. Japanese attack Pearl Harbor, Wake, Guam, Philippines, British Malaya, Hong Kong; invade Thailand. Netherlands Indies, Canada declare war on Japan.
8. United States, Britain declare war on Japan. Thailand surrenders to Japan. Japanese attack Midway Island.
9. Japanese planes sink British ships *Prince of Wales* and *Repulse* off Malaya. China declares war on Japan, Germany, Italy.
10. Germany, Italy declare war on United States. Japanese land on Luzon in the Philippines.
11. United States declares war on Germany, Italy.
12. Japanese occupy Guam.
17. Japanese invade Borneo.
21. Hitler takes personal command of German army.
23. United Nations confer in Washington.
24. Wake Island surrenders to Japanese.
25. Hong Kong falls to Japanese.

• 1942 •

JANUARY 2. Twenty-six nations sign United Nations Pact. Japanese enter Manila, occupy Cavite naval base.
11. Japanese invade Netherlands Indies at Tarakan.
16. United States creates War Production Board.
19. Japanese invade Burma from Thailand.
21. Rommel's *Afrika Korps* advances into Cyrenaica.
23. Japanese invade Solomons, New Britain, New Guinea.
23–24. United States cruisers and destroyers attack Japanese forces in Makassar Strait.
26. First A.E.F. since 1918 lands in Ireland.
28. Inter-American conference at Rio de Janeiro affirms solidarity.
29. *Afrika Korps* takes Bengasi, Libya, after 200-mile drive. Iran signs coöperation pact with Russia, Britain.
31. Siege of Singapore begins. American Navy raids Gilbert and Marshall islands. British evacuate Moulmein, Burma.

FEBRUARY 14. Japanese occupy ports in southern Borneo, invade Sumatra.
15. Singapore falls to Japanese.
19. Japanese planes bomb Port Darwin, Australia.
20. Japanese invade Bali in East Indies.
24. United States naval task force bombards Wake Island.
27–29. Allies lose 16 ships in battle of the Java Sea.
28. Japanese land in northern Java.

MARCH 4. United States Navy raids Marcus Island.
8. Rangoon, capital of Burma, falls.
9. Japanese take all key positions in Java.
17. MacArthur reaches Australia from Philippines, assumes command of United Nations' forces in Southwest Pacific.
23. Japan occupies Andaman Islands in Bay of Bengal.
28. British Commandos raid U-boat base at St. Nazaire. United States public debt raised to $125,000,000,000.

APRIL 9. Bataan peninsula falls after four-month siege.
11. India refuses dominion status; asks immediate liberty.
18. Doolittle leads B-24 bombers from *Hornet* to raid Tokyo, Yokohama, Nagoya.
22. British Commandos raid Boulogne.
25. American troops land in New Caledonia.
30. Japanese capture Lashio on Burma Road.

MAY 2. Mandalay falls to Japanese.
4–8. United States Navy defeats Japanese invasion fleet in battle of Coral Sea.
6. Corregidor falls. U-boats sink ships in Gulf of Mexico.
11. Nazis open spring offensive in Crimea.
12. Russia counterattacks on Kharkov front.
14. WAAC law creates Women's Army Auxiliary Corps.
15. Japanese gain virtually undisputed possession of Burma.
22. Mexico declares war on Axis.
24. Russians evacuate Kerch Peninsula in east Crimea.
30. British send 1,000-bomber flight to destroy Cologne.

JUNE 3. Japanese bomb Dutch Harbor.
3–6. United States Navy defeats Japanese, battle of Midway.
4–6. Japanese invade Aleutian Islands.
10. Nazis raze Lidice in reprisal for assassination of Heydrich, German governor of Czechoslovakia.
21. Nazis take Tobruk. Japanese submarine shells seaside, on Oregon coast.
25. Germans penetrate Egypt. Eisenhower lands in London. FBI seize 8 Nazi saboteurs landed by U-boat.

JULY 1. British 8th Army stems Rommel's drive at El Alamein. Sevastopol falls to Germans after 245-day siege.
4. First United States fliers raid Europe (Germany).
14. "Free French" change name to "Fighting French."
22. Japanese land at Gona, Buna in New Guinea.
28. Russians evacuate Rostov as Nazis drive toward Caucasus.
30. United States Navy establishes the WAVES.

AUGUST 7. United States Marines land on Guadalcanal, Tulagi.
9. Japanese naval force sinks 3 American and 1 Australian cruisers at battle of Savo Island, fail to press advantage.
17. United States Marines raid Makin Island.
19. British-Canadian Commandos, American Rangers raid Dieppe.
22. Brazil declares war on Axis.
24. Nazis advance on Stalingrad.
26. American bombers raid Lashio in Burma.
30. Germany annexes Luxemburg.

SEPTEMBER 9. Japanese incendiary bomb found in Oregon.
11. Nazis take naval base at Novorossisk on Black Sea.
14. United States bombers make first major raid on Kiska.
30. Allies drive Japanese back in New Guinea.

OCTOBER 1. United States rations fuel oil.
11–12. Japanese lose 8 ships at battle of Cape Esperance.
13. United States Army troops join Marines on Guadalcanal.

NOVEMBER 6. Rommel's *Afrika Korps* retreats.
8. American forces invade North Africa, 3:00 a.m. Algeria time.
11. Hitler occupies "unoccupied" France.
13–15. American Navy defeats Japanese off Guadalcanal.
14. Allied troops enter Tunisia.
20. Alaska Military Highway (Alcan) opens. Allies take Gona in northern New Guinea.
27. French scuttle fleet at Toulon to prevent Axis seizure.

DECEMBER 1. Darlan assumes authority over French North Africa. United States rations gasoline nationally.
14. Americans, Australians take Buna village, New Guinea.
19. British, under Wavell, begin invasion of Burma.
24. Darlan assassinated in Algiers.

• 1943 •

JANUARY 2. Russians recapture Velikie Luki.
6. United States makes first daylight raid on Rabaul.
18. Russian army lifts siege of Leningrad.
23. Americans-Australians take Sanananda, New Guinea.
26. Casablanca conference announces demand for "unconditional surrender."
28. British take Tripoli, Rommel in retreat.

FEBRUARY 2. Russians defeat Nazis at Stalingrad.
6. Eisenhower appointed commander in chief of all United Nations' forces in North Africa.
9. United States forces completely occupy Guadalcanal.
14. Red army recaptures Rostov.
16. Red army recaptures Kharkov.
21. Allies evacuate Kasserine Pass in Tunisia.
25. Allies recapture Kasserine Pass.

MARCH 2–6. Allies bomb Japanese fleet in Bismarck Sea.
10. United States says 14th Air Force set up in China by Chennault.
14. Germans recapture Kharkov.
16. Chinese defeat Japanese in Hunan-Hupeh.
29. British break German Mareth Line in Tunisia.

APRIL 8. British and American forces join in Tunisia.

MAY 7. Announce American troops occupy Adak, Amchitka.
8. Allies capture Tunis and Bizerte.
11. American forces invade Attu in Aleutian Islands.
12. German resistance ends in North Africa.
29. Americans conquer Attu.

JUNE 4. De Gaulle forms French Committee of National Liberation.
12. Allies take Pantelleria after "saturation" bombing started May 9.
19. American planes from Funafuti bomb Tarawa.
30. Allies land on Rendova in New Georgia group.

JULY 5. United States Navy victorious in Kula Gulf. Americans land on New Georgia.
9. Allies invade Sicily.
25. Mussolini succeeded by Badoglio.
29. Eisenhower broadcasts peace offer to Italy.

AUGUST 1. U.S. planes bomb Ploesti oil fields.
5. British enter Catania in Sicily.
6. Americans take Munda on New Georgia Island.
11. Roosevelt and Churchill confer in Quebec, Canada.
15. Americans-Canadians land on deserted Kiska.
17. Americans take Messina to end Sicily campaign.
28. Japanese evacuate New Georgia.

SEPTEMBER 3. Allies invade southern Italy, receive Italian surrender effective 5 days later.
9. American 5th Army invades Italy at Salerno. Reds take Stalino in Donets basin.
10. British take Taranto naval base at tip of southern Italy. Germans seize Rome, assure "protection" of Vatican.
11. MacArthur's forces take Salamaua.
16. MacArthur's forces capture Lae, New Guinea.
17. British 8th Army joins American 5th Army at Salerno.
25. Nazis evacuate Smolensk.
29. American Marines invade Nanumea in Ellice group.

OCTOBER 1. Allies take Naples; Germans retreat north to Volturno River.
3. MacArthur's forces capture Finschafen after 10-day campaign.
12. Portugal opens Azores bases to the Allies.
13. Italy declares war on Germany.
18. Allies force Nazis from Volturno line.

NOVEMBER 1. United States Marines invade Bougainville.
6. Red army liberates Kiev in midst of winter offensive.
21. United States Marines, Army land on Tarawa and Makin.
22. Roosevelt, Churchill, Chiang Kai-shek open Cairo talks; finish November 25.
24. Americans conquer Tarawa and the Gilberts.
28. Roosevelt, Churchill, Stalin open Tehran conference; agree on final plans to defeat Germany; conclude talks December 1.

DECEMBER 26. Marines land at Cape Gloucester, New Britain.

• 1944 •

JANUARY 4. Reds cross 1939 Polish border.
11. Allied troops penetrate western Burma.
19. Reds cut German lines in north around Leningrad.
22. Allies land at Anzio beachhead.
23. Allies withdraw from Rapido River.
25. Allies begin attack on Cassino.
30. Allies cross Rapido under heavy fire.

FEBRUARY 1. Marines land on Kwajalein. American planes bomb Paramushiru.
16. American planes bomb Ponape, 400 miles east of Truk.
17. United States Navy task force bombs and shells Truk.
21. Americans take Eniwetok in Marshall Islands.
29. MacArthur's forces invade Admiralty Islands.

MARCH 6. First U. S. troops fight in Asia, seizing Walawbum in Burma.
18. Allied paratroops land behind enemy lines in Burma.
20. Germans begin military occupation of Hungary.
28. Japanese invade India on Manipur plain near Imphal.

29–31. Naval force raids Peleliu Island in the Palaus.

APRIL 3. American forces occupy Bikini atoll.
22. Americans invade Hollandia in north New Guinea.

MAY 9. Russians recapture Sevastopol after 24-day siege.
11. Allies break through German line south of Cassino.
17. Merrill's Marauders take Myitkyina air field, Burma.
18. Allies capture Cassino.

JUNE 4. American 5th Army enters Rome.
5. King Victor Emmanuel of Italy transfers royal power to his son, Humbert, as Lieutenant General of the Realm.
6. Allies invade France at Normandy coast.
8. Chinese troops capture Lungling on Burma Road.
13. Germans launch robot bombs on southern England.
15. United States Marines invade Saipan in the Mariannas.
16. China-based B-29's raid southern Japan.
25. Americans enter Cherbourg; entire Cherbourg peninsula captured July 2.
28. Japanese take Hangyang, American air base, China.

JULY 3. Russians win Minsk, capital of White Russia.
8. Japanese resistance on Saipan broken.
9. British-Canadian forces capture Caen.
17. American forces penetrate St. Lô, Normandy.
19. Americans enter Livorno; occupy St. Lô.
20. American Marines invade Guam. Hirohito ousts Tojo. Hitler injured by bomb in assassination attempt.
23. United States Marines land on Tinian; Americans enter Pisa.
25. Russians take Lublin, Polish rail center.
31. Americans take Avranches for Normandy breakthrough.

AUGUST 1. Japanese resistance ceases on Tinian.
2. Turkey severs relations with Germany.
3. Patton's troops take Rennes, chief city of Brittany. Americans, Chinese take north Burma base of Myitkyina.
4. Russians penetrate to outskirts of Warsaw.
8. Organized resistance on Guam ceases.
15. Allied armies invade southern France from the sea.
16. British drive Japanese back over frontier of India.
19. Americans-Canadians converge on Falaise "pocket," closing it August 22, ending battle of Normandy. People of Paris and Underground attack German army.
20. American advance patrols enter Versailles.
21. French troops take Toulon; Dumbarton Oaks Conference opens in Washington, D. C.
22. Germans leave Florence, retire to Gothic Line.
23. King Michael orders Rumanian army to cease fire.
24. French troops enter Paris. Finland asks Russia for armistice. Russia forces Rumania to capitulate.
25. Americans march into Paris.
28. Russians enter Transylvania region of Hungary.
29. Americans enter Soissons.
31. Americans enter Nice, Reims, Verdun. Reds enter Bucharest, drive Germans from Ploesti oil fields.

SEPTEMBER 2. Hodges' 1st Army crosses into Belgium.
3. Russians cross Danube River, enter Bulgaria.
4. Finland ends war on Russia. British take Brussels.
5. Allies take Antwerp. Russia declares war on Bulgaria.
8. Russians enter Yugoslavia. Allies take Liége.
9. Russia grants armistice to Bulgaria.
10. Allies take Lyons.
11. American 1st Army crosses German border east of Aachen. Roosevelt, Churchill confer at Quebec.
12. Le Havre surrenders.
14. Allies penetrate the Netherlands. Americans land on Morotai Island.
15. Marines invade Peleliu in the Palaus. Americans breach Siegfried Line east of Aachen.
17. Nazis pocket Allied air-borne landings at Arnheim.
19. Finland signs armistice with Russia.
20. Allies capture Nijmegen bridge. Brest surrenders.
24. British air-borne troops invade Greece.
25. Reds enter Czechoslovakia.
26. Air-borne Allies surrender in Arnheim trap.
27. Allies land in Albania.

OCTOBER 1. Americans evacuate Tanchuk air base, China.
12. Americans enter Aachen suburbs. City falls October 20.
13. British liberate Athens.
16. Partisans, Russian forces enter Belgrade.
20. Americans begin Philippine campaign, invade Leyte.
23. United States, Britain, Russia recognize De Gaulle government.

24–26. American Navy defeats Japanese in Leyte Gulf.
31. Liberation of Greece completed.

NOVEMBER 5. Allies bomb Singapore.
20. American 3d Army takes Metz.
24. B-29's bomb Tokyo in first raid since 1942.

DECEMBER 5. Canadians smash German Adriatic defenses, enter Ravenna.
15. United States forces invade Mindoro in Philippines.
16. Germans counterattack at Ardennes Forest to begin "battle of the Bulge."
20. U. S. 101st Air-borne Division trapped at Bastogne.
26. MacArthur announces end of resistance on Leyte. Russians penetrate Budapest suburbs. City falls February 13.
27. Americans take offensive in "battle of the Bulge."

• 1945 •

JANUARY 9. Americans invade Luzon at Lingayen Gulf.
17. Reds take Warsaw, enter Cracow, Lodz in next two days.
20. Hungary signs armistice with Allies.
21. Ledo-Burma road opened to convoys to China.

FEBRUARY 4. Americans enter Manila. Roosevelt, Churchill, Stalin confer at Yalta.

10–11. Americans take Roer dam at Schwammenauel.
16. Americans take Bataan. Take Corregidor next day.
19. United States Marines land on Iwo Jima.
21. Twenty American republics meet in Mexico City, hold Inter-American Conference on Problems of War and Peace.
23. Turkey declares war on Germany, Japan.
26. Egypt declares war on Germany, Japan.

MARCH 3. Act of Chapultepec signed in Mexico City. Finland declares war on Germany in an act dated March 1.

5–6. American 1st Army seizes Cologne.
8. Americans seize Remagen bridge; cross Rhine river.
14. Russians cross Oder River north of Frankfort.
16. Marines complete conquest of Iwo Jima.
18. American 3d Army takes Rhine City of Coblenz.
20. British take Mandalay.
27. Argentina declares war on Germany and Japan.

APRIL 1. United States Army, Marines land on Okinawa.
5. Russia cancels 1941 neutrality pact with Japan.

8–13. Russians capture Vienna.
12. President Roosevelt dies.
16. Americans take Nuremberg. Enter Leipzig next day.
18. Americans cross Czechoslovakia, cut Germany in two.
21. Russians enter Berlin. Allies take Bologna, Italy.
22. British 2d Army captures Bremen, enters Hamburg.
24. United States refuses Himmler's offer to surrender.
25. San Francisco Conference to form United Nations opens. American, Russian patrols meet at Torgau on Elbe River.
26. American, Russian armies join at Torgau. Russians take Stettin on the Baltic.
28. Italian partisans execute Mussolini.
29. Germans in northern Italy, southern Austria surrender, but announcement withheld until May 2.
30. Hitler commits suicide.

MAY 2. Berlin surrenders.
4. Nazis surrender Denmark, Netherlands, all northern Germany to Montgomery.
7. Germans surrender unconditionally at Reims. Announced on May 8.
24. Heinrich Himmler, German Gestapo chief, commits suicide.

JUNE 21. Americans complete conquest of Okinawa.
26. Fifty nations sign charter of United Nations.
28. MacArthur announces liberation of Luzon.

JULY 5. United States, Britain recognize provisional Warsaw government. MacArthur announces complete liberation of Philippines.
14. Navy bombards Honshu and Hokkaido.
16. United States Army explodes experimental atomic bomb on New Mexico desert.

17–Aug. 2. Truman, Churchill (later Attlee), Stalin meet at Potsdam, agree to decentralize Germany.

AUGUST 6. American plane drops atomic bomb on Hiroshima.
8. Russia declares war on Japan.
9. Atomic bomb dropped on Nagasaki.
14. Japan accepts Allied surrender terms.
27. American occupation force enters Japan.

SEPTEMBER 2. Japan surrenders formally aboard U.S.S. *Missouri* in Tokyo Bay.

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THE FLOWERING AND THE WITHERING OF NAZIISM

These pictures of Hitler's "retreat" at Berchtesgaden, Austria, are symbolic of the rise and fall of his power in Europe. Once dominant, both the building and Hitler's rule were smashed by the relentless might of the victorious Allies.

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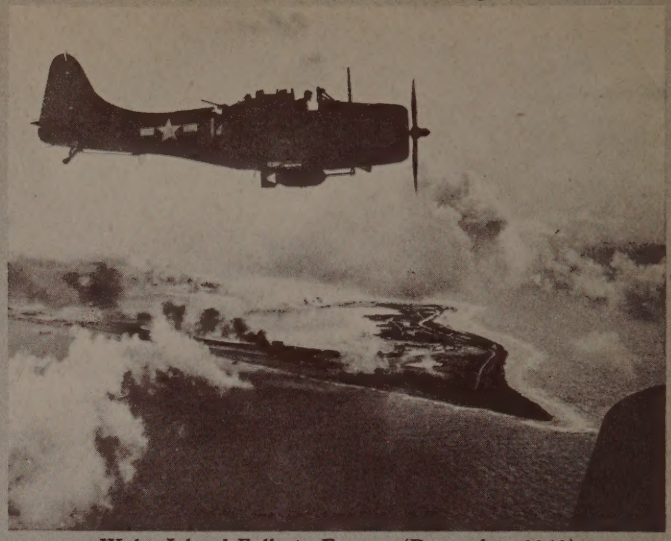
FROM PEARL HARBOR TO SURRENDER OF JAPAN—

Japanese Bomb Pearl Harbor Base (Dec. 7, 1941)



Wake Island Falls to Enemy (December 1941)

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